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ABSTRACT

This task-based curriculum guide is intended to help secondary teachers provide relevant training for an entry-level job in masonry. Introductory materials include background information on trade and industrial education and program goals and safety information. Descriptions follow of the construction trades program, vocational cooperative education, work experience/unpaid work experience, work experience and career exploration programs, and vocational work study. This job information is then provided: job titles and a task inventory for masonry. Tasks are grouped under these seven duties: constructing foundations, working with flat concrete, helping mason, constructing brick buildings, constructing concrete block buildings, constructing residential chimneys and fireplaces, and using employability skills. Duty tabs comprise the largest portion of the curriculum guide. Each task in the listing is presented in a one-page format that provides this information: duty, task, achievement indicators, criteria, tools and equipment, and resources. Other components of the curriculum guide include a student achievement record, a class achievement record, and a glossary of vocational terms. (YLB)

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MICHIGAN TRADE & INDUSTRIAL EDUCATION
CURRICULUM GUIDE

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INTRODUCTION

The Michigan Department of Education, Vocational-Technical Education Service, has adopted descriptions and codes for vocational-technical education programs found in the document entitled, "A Classification of Instructional Programs" (C.I.P.) National Center for Educational Statistics, February, 1981. This new coding system is required of all states in reporting data on all programs receiving funds under P.L. 94-482, the Vocational Education Amendments of 1976.

The current United States Office of Education (U.S.O.E.) coding system was discontinued at the conclusion of the 1981-82 school year. The 1982-83 school year is a transition year from the U.S.O.E. code system to the new C.I.P. Code system.

This Michigan Trade and Industrial Education Curriculum Guide uses the new C.I.P. program description code(s) and lists the entry level job titles associated with the occupational program area by the Dictionary of Occupational Titles (Fourth Edition, 1977), D.O.T. Code, and the Michigan Occupational Information System, (M.O.I.S.), Numerical Index code. NOTE: This information is located under Job Information with program description(s).

PROGRAM DEFINITIONS/GOALS

Vocational Education

The term "vocational education" means organized educational programs which are directly related to the preparation for paid or unpaid employment or for additional preparation for a career requiring other than a baccalaureate or advanced degree.[1]

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[1] The Education Amendments of 1976, Section 195(1), Public Law 94-482.

Goals of Vocational-Technical Education

(1) To provide persons with differing sex, age, racial/ethnic backgrounds, social-economic status, academic disadvantage, economic disadvantage, limited English speaking ability, physical and mental capabilities, and geographical location access to vocational-technical education training or retraining.

(2) To coordinate pre-vocational exploration, career guidance, and placement programs so that each student may make informed and realistic occupational choices and have access to quality placement programs.

(3) To provide all students with learning experiences which are realistic and sufficient in light of their occupational objective.

(4) To insure that all vocational-technical programs will be planned, monitored, and evaluated in light of actual or anticipated employment opportunities and the demand by students for programs related to their abilities and occupational objectives.

Trade and Industrial Education

A vocational education curriculum that includes programs for manufacturing, construction, mechanical service, public service, health service, technical, and fisheries occupations, that prepares a person for entry level employment, upgrading or retraining in a semiskilled or skilled trade, semiprofessional or technical occupation, not generally classified as Agriculture, Distributive, Business or Office, in the Health profession, or Consumer/Home Economics in nature.

NOTE: The occupational clusters found within the scope of trade and industrial education include skilled or semiskilled trade, craft, or occupations which directly relate to the designing, producing, processing, assembling, maintaining, servicing, or repairing of any manufactured product.

TRADE AND INDUSTRIAL EDUCATION STUDENT ORGANIZATION

VICA

The Vocational Industrial Clubs of America (VICA) is the national organization serving trade, industrial, technical, and health occupations students in the United States. VICA incorporates leadership, citizenship, and character development programs and activities into the skill training offered in America's schools and taught by men and women who have worked in the occupational areas in which they now instruct their students.

VICA emphasizes respect for the dignity of work, high standards in trade ethics, workmanship, scholarship, and safety. VICA promotes understanding of the free enterprise system and encourages development of patriotism through the practice of democracy within the club.

Competitive activities in the trade skills as well as areas such as public speaking, job interview, parliamentary procedure and safety are vital aspects of VICA's program.

TRADE AND INDUSTRIAL EDUCATION CURRICULUM GUIDE

This Michigan Trade and Industrial Education Curriculum Guide is the result of a project funded by the Michigan State Board of Education and the Michigan Department of Education, Vocational-Technical Education Service. The project is located at Michigan State University in the College of Agriculture and Natural Resources' Education Institute (ANREI) and is known as the Curriculum Resource Team.

The project is directed by Dr. Chris M. Olson and Ms. Carol E. Culpepper, Faculty Specialist, Curriculum Resource Team Coordinators. They were responsible for developing the curriculum format and working with a task force leader and committee of individuals from business, industry, and education to ensure the quality of the curriculum. The development of this curriculum was monitored by Melvin France, Secondary Trade and Industrial Education Supervisor.

The names of the occupational task force leader(s) committee members, secretaries, and other support staff are acknowledged after this Introduction.

The occupational program area(s) selected for curriculum development are based on a Vocational-Technical Education Service prioritized program ranking based on employment demand, State average percent of placement, reimbursed enrollments, the number of programs, and entry level wages within the State of Michigan.

This curriculum guide was developed from the results of a statewide survey and job analysis of incumbent workers in the related occupational areas.

The curriculum guide is representative of the occupational job duty categories which list major activities and tasks performed on an entry level job. The curriculum guide contains a resource list and criteria statements which indicate the minimum standards of performance accepted as evidence of competence in completion of the task by business and industry. This is a task-based curriculum guide which helps a teacher develop a classroom management system where students learn by doing. It is based on task analysis and reflects the skills, knowledge, and attitudes that employers expect incumbent workers to possess.

The curriculum is linked to the labor market, helps the instructor open communication channels with business and industry, and manage classroom instruction where students learn "Need-to-Know" instead of "Nice-to-Know" facts.

This curriculum is adaptable for special needs/handicapped students, helps to validate the program, prepares students for entry level jobs and helps students to make career choices related to job placement.

It is the intent by all those involved in the development of this curriculum guide that it be used to provide relevant training or retraining for employment in the world of work.

The secondary occupational programs/courses in Michigan should meet the following minimum standards to assure soundness and quality of instruction:

(1) The program of instruction must be based on a consideration of the skills and knowledge required in the occupation for which the

instruction is being provided, and includes a planned logical sequence for those essentials of education or experience deemed necessary for the individual to meet an occupational objective.

(2) The program of instruction must be developed and conducted in consultation with a Local Advisory Council/Committee which has an appropriate representation of both sexes and an appropriate representation of racial and ethnic minorities found in the program area, school, and community origin. The local advisory council will advise on current job needs, relevance of programs, and courses in meeting current job needs and consult with the local educational agency in developing program application.

(3) The program of instruction will include the most up-to-date curriculum based on the competencies required in the occupation or occupational field in which the individual is being prepared, upgraded, or updated.

(4) The program of instruction will be sufficiently extensive in duration and intensive within a schedule unit of time to enable the student to develop the necessary knowledge, attitudes, and skills necessary for employment in the occupation or occupational field.

(5) The program of instruction will combine and coordinate related instruction with field, shop, laboratory, cooperative work, or other occupational experience which is appropriate to the vocational objective of the student, is of sufficient duration to develop competencies necessary for employment in the occupation or occupational field, and supervised, directed, or coordinated by a person qualified under the State Plan.

Facilities, equipment, and instructional materials:

(1) Classrooms, libraries, shops, laboratories, and other facilities, including instructional equipment, supplies, teaching aids, and other materials will be adequate in supply and quality to meet the standands approved by the State Board so that such facilities are adequate to enable those who are to be trained to meet the occupational objective for which the education is intended.

(2) If the State Board or local educational agency cannot provide adequate facilities and materials, and such are available in a business or industrial establishment, funds may be used to reimburse the local public educational agency for training programs conducted in private industry when it complies with the training standards and regulations established by the State Board. Such instruction shall be under the supervision and administration of a local public educational agency.

ACKNOWLEDGEMENT

The Michigan Trade and Industrial Curriculum Guide(s) were developed through a series of workshops held throughout the State and at Michigan State University during the 1982-83 school year.

Appreciation is given to all who have contributed their thoughts, time and energy to this curriculum project.

The Michigan Department of Education, Vocational-Technical Education Service, is indebted to the following individuals who were instrumental in the completion of this project and the development of the materials:

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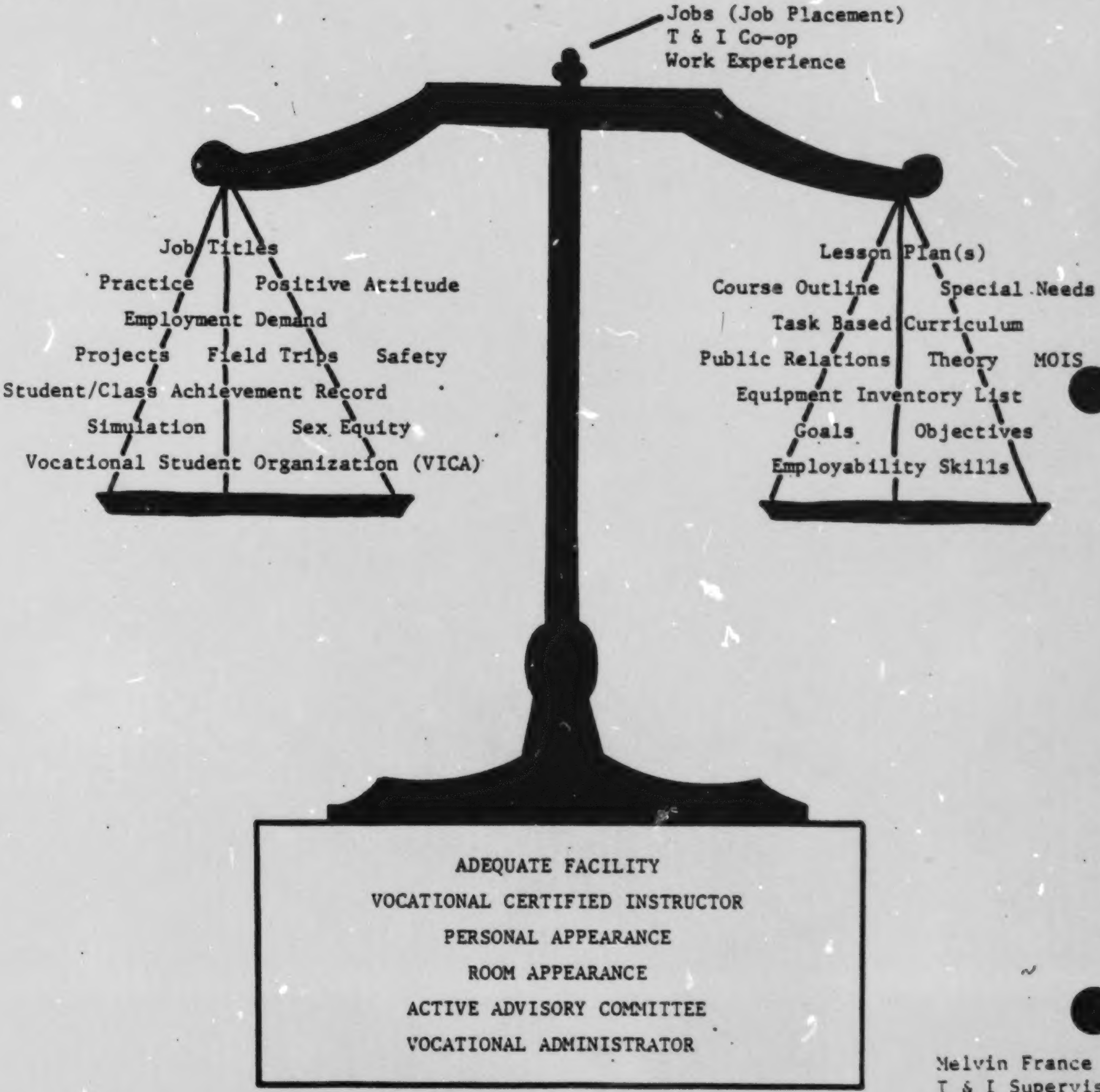
MICHIGAN TRADE AND INDUSTRIAL EDUCATION

IS YOURS A BALANCED PROGRAM?


Jobs (Job Placement)
T & I Co-op
Work Experience
Job Titles
Practice
Positive Attitude
Employment Demand
Projects
Field Trips
Safety
Student/Class Achievement Record
Simulation
Sex Equity
Vocational Student Organization (VICA)
Lesson Plan(s)
Course Outline
Special Needs
Task Based Curriculum
Public Relations
Theory
MOIS
Equipment Inventory List
Goals
Objectives
Employability Skills
ADEQUATE FACILITY
VOCATIONAL CERTIFIED INSTRUCTOR
PERSONAL APPEARANCE
ROOM APPEARANCE
ACTIVE ADVISORY COMMITTEE
VOCATIONAL ADMINISTRATOR

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DEPARTMENT OF EDUCATION

STATE BOARD OF EDUCATION

EYE PROTECTIVE DEVICES

Filed with Secretary of State,

These rules take effect 15 days after filing with the Secretary of State.

(By authority conferred on the state board of education by section 585a of Act No. 269 of the Public Acts of 1955, as added, being section 340.585a of the Compiled Laws of 1948.)

R 340.1301. Definitions.

Rule 1. As used in these rules:

(a) "Caustic" or "acid" means a material, exclusive of hot water or steam, capable of destroying, eroding or burning of flesh by chemical action.

(b) "Explosive material" means a substance capable of a large-scale, rapid and spectacular expansion which will propel materials in a manner causing injury to the human body.

(c) "Hot liquid" or "solid" means a material having effects that are physically harmful to the eyes.

(d) "Sanitizing" means the disinfecting and cleaning of eye protective devices before use.

(e) "When exposure to eye danger exists" means the exposure when a person is within that distance from sparks, flying particles, rays, molten metal, fumes, glare, glass breakage or chemical splash that such an object or condition could cause damage to his eyes, if he was not using a protective device.

R 340.1302. Educational courses requiring eye protection.

Rule 2. A public educational agency which enrolls students in the following courses when exposure to eye danger exists, shall furnish eye protective devices: vocational or industrial arts shops or laboratories involving the use of or working with hot molten metals, milling, sawing, turning, shaping, grinding, cutting or stamping of any solid materials; heat treatment, tempering or kiln firing of any metal or other materials; gas or electric arc welding; repair or servicing of any vehicles; caustic or explosive materials; or chemical or combined chemical-physical laboratory work involving acid, caustic or explosive chemicals or hot liquids or solids.

R 340.1303. Standards for devices.

Rule 3. (1) An eye protective device shall meet the following standards based upon the operation involved:

(a) Acetylene burning, acetylene cutting, and acetylene welding operations - welding goggles of eyecup type with tinted lenses or welding goggles of coverspec type with tinted lenses or welding goggles of coverspec type with tinted plate lenses. This protects against the primary hazards of sparks, harmful rays, molten metal and flying particles.

(b) Chemical handling operations - goggles of flexible fitting with hooded ventilation or face shield with plastic or mesh window. This protects against the primary hazards of splash, acid burns and fumes.

(c) Chipping operations - goggles of flexible fitting with regular ventilation or goggles of cushioned fitting with rigid body or spectacles of metal frame with sideshields or spectacles of plastic frame with sideshields or spectacles of metal-plastic frame with sideshields or chipping goggles of eyecup type with clear safety lenses or chipping goggles of coverspec type with clear safety lenses. This protects against the primary hazard of flying particles.

(d) Electric (arc) welding operations - welding goggles of coverspec type with tinted plate lenses or welding helmets or welding helmet in combination with tinted lens spectacles. This protects against the primary hazards of sparks, intense rays and molten metal.

(e) Furnace operations - welding goggles of eyecup type with tinted lenses or welding goggles of coverspec type with tinted lenses or welding goggles of coverspec type with tinted plate lenses. This protects against the primary hazards of glare, heat and molten metal.

(f) Light grinding, machining, and spot welding operations - goggles of flexible fitting with regular ventilation or goggles of cushioned fitting with rigid body or spectacles of metal frame with sideshields or spectacles of plastic frame with sideshields or spectacles of metal-plastic frame with sideshields or face shield with plastic or mesh window. This protects against the primary hazards of flying particles and sparks.

(g) Heavy grinding operations - goggles of flexible fitting with regular ventilation or goggles of cushioned fitting with rigid body or chipping goggles of eyecup type with clear safety lenses or chipping goggles of coverspec type with clear safety lenses or in case of severe exposure add face shield with plastic or mesh window. This protects against the primary hazard of flying particles.

(h) Laboratory operations - goggles of flexible fitting with hooded ventilation or face shield in combination with metal or plastic frame spectacles with sideshields. This protects against the primary hazards of chemical splash and glass breakage.

(i) Molten metal operations - welding goggles of eyecup type with tinted lenses or welding goggles of coverspec type with tinted lenses or face shield in combination with metal or plastic frame spectacles with sideshields and tinted lenses. This protects against the primary hazards of heat, glare, sparks and splash.

(2) The standards described in subrule (1) are taken from the American National Standards Safety Code Z87.1-1968, figure 8, page 28, which is available from the American National Standards Institute, Incorporated, 1430 Broadway, New York, New York 10018, at a cost of $5.00. Applicable excerpts from the American National Standards Safety Code are available at no cost from the Michigan department of education, Lansing, Michigan.

R 340.1304. Sanitization of devices.

Rule 4. An eye protective device shall be sanitized when 2 or more students use the same device, by either:

(a) Washing after each use in warm water and soap or detergent, followed by a rinse in running water.

(b) Placing in a cabinet with ultraviolet light and washing once a week as in subdivision (a).

R 340.1305. Compliance.

Rule 5. (1) A superintendent of a school district shall certify to the intermediate school district superintendent not later than the second week of each school year, on forms prescribed by the Michigan department of education, that eye protective devices meeting the standards of these rules have been obtained. For the school year 1972-73, certification shall be made within 4 weeks after the effective date of these rules. This certification shall also indicate that instructors have been informed that all students, teachers and visitors shall wear the devices when exposure to eye damage exists, as identified in these rules.

(2) An intermediate school district superintendent shall report to the state superintendent of public instruction by October 1 the names of those constituent school districts which are not in compliance with these rules. For the school year 1972-73, the report shall be made within 6 weeks after the effective date of these rules.

(3) The state superintendent of public instruction shall notify a school district in violation of these rules that it shall comply or show cause why compliance cannot be made within 30 days.

ACT NO. 54 OF THE PUBLIC ACTS OF 1972

ENROLLED SENATE BILL NO. 553

AN ACT to amend Act No. 269 of the Public Acts of 1955, entitled "The Michigan School Code", and to repeal certain acts and parts of acts, as amended, being sections 340.1 to 340.984 of the Compiled Laws of 1948, by adding section 585a.

The People of the State of Michigan enact:

Section 1. Act No. 269 of the Public Acts of 1955, as amended, being sections 340.1 to 340.984 of the Compiled Laws of 1948, is amended by adding section 585a to read as follows:

Sec. 585a. (1) Every pupil and teacher participating in a course mentioned in this section shall wear industrial quality eye protective devices, which have been sanitized prior to use, when exposure to danger exists while participating in such course. The board of education shall furnish the devices for pupils, teachers and visitors to the classrooms or laboratories. The courses for which protective devices are required are:

(a) Vocational or industrial arts shops or laboratories involving the use of or working with hot molten metals, milling, sawing, turning, shaping, grinding, cutting or stamping of any solid materials: heat treatment, tempering or kiln firing of any metal or other materials; gas or electric arc welding; repair or servicing of any vehicle; or caustic or explosive materials.

(b) Chemical or combined chemical-physical laboratory work involving acid, caustic or explosive chemicals or hot liquids or solids.

(2) "Industrial quality eye protective devices" means devices meeting the standards of the american standard safety code for head, eye and respiratory protection, Z87.1-1968, promulgated by the american standards association, incorporated.

(3) The provisions of this section shall be enforced pursuant to rules promulgated by the state board of education in accordance with and subject to Act No. 306 of the Public Acts of 1969, as amended, being sections 24.201 to 24.315 of the Compiled Laws of 1948.

Section 2. This amendatory act shall take effect September 1, 1972.

The following adapted from the:

NATIONAL STANDARD SCHOOL SHOP SAFETY INSPECTION CHECK LIST

Prepared by the Joint Safety Committee of the
AMERICAN VOCATIONAL ASSOCIATION — NATIONAL SAFETY COUNCIL

______________________________ Date______________

____

INTRODUCTION

A *safe* environment is an essential part of the school shop *safety* education program. The *safe* environment will exist only if hazards are discovered and corrected through *regular* and *frequent* inspections by school personnel—administrators, teachers and students. Safety inspections are to determine if everything is satisfactory.

Inspections may be made at the request of the board of education, the school administration or upon the initiative of the teacher. Some communities have drawn upon the cooperative service of professional safety engineers, inspectors of state labor departments, insurance companies and local *safety* councils to supplement and confirm inspections by school personnel.

The National Standard School Shop Safety Inspection Check List, recommended by the President's Conference on Industrial Safety is an objective inspection procedure for the school shop.

DIRECTIONS

WHO INSPECTS?

This will depend upon local policies. It is recommended, however, that shop teachers, and students—the student *safety* engineer and/or student safety committee—participate in making regular inspections. This not only tends to share responsibility but stimulates a broader interest in the maintenance of a *safe* school shop.

WHEN TO INSPECT?

As a minimum, a safety inspection should be made at the beginning of every school term or semester. More *frequent* inspections may be advisable.

HOW TO INSPECT?

Inspections should be well planned in advance.

Inspections should be systematic and thorough. No location that may contain a hazard should be overlooked.

Inspection reports should be clear and concise, but with sufficient explanation to make each recommendation *for* improvement understandable.

FOLLOW-UP

The current report should be compared with previous records to determine progress. The report should be studied in terms of the accident situation so that special attention can be given to those conditions and locations which are accident producers.

Each unsafe condition should be corrected as soon as possible in accordance with accepted local procedures.

A definite policy should be established in regard to taking materials and equipment out of service because of unsafe conditions.

The inspection report can be used to advantage as the subject for staff and class discussion.

CHECKING PROCEDURE

Draw a circle around the appropriate letter, using the following letter scheme:

S — Satisfactory (needs no attention)
A — Acceptable (needs some attention)
U — Unsatisfactory (needs immediate attention)

Recommendations should be made in all cases where a "U" is circled. Space is provided at the end of the form for such comments. Designate the items covered by the recommendations, using the code number applicable (as B-2).

In most categories, space is provided for listing of standards, requirements or regulations which have local application only.

A. GENERAL PHYSICAL CONDITION

1. Machines, benches, and other equipment are arranged so as to conform to good safety practices.......................... S A U
2. Condition of stairways.......................... S A U
3. Condition of aisles.......................... S A U
4. Condition of floors.......................... S A U
5. Condition of walls, windows, and ceiling.......................... S A U
6. Illumination is safe, sufficient, and well placed.......................... S A U
7. Ventilation is adequate and proper for conditions.......................... S A U
8. Temperature control.......................... S A U
9. Fire extinguishers are of proper type, adequately supplied, properly located and maintained.......................... S A U
10. Teacher and pupils know location of and how to use proper type for various fires.......................... S A U
11. Number and location of exits is adequate and properly identified.......................... S A U
12. Proper procedures have been formulated for emptying the room of pupils and taking adequate precautions in case of emergencies S A U
13. Lockers are inspected regularly for cleanliness and fire hazards. S A U
14. Locker doors are kept closed.......................... S A U
15. Walls are clear of objects that might fall.......................... S A U
16. Utility lines are properly identified.......................... S A U
17. Teachers know the procedure in the event of fire including notification of the fire department and the evacuation of the building. S A U
18. Air in shop is free from excessive dust, smoke, etc.... S A U
19. ______________________________ S A U
20. ______________________________ S A U
21. ______________________________ S A U
22. ______________________________ S A U
23. Evaluation for the total rating of A. GENERAL PHYSICAL CONDITION.......................... S A U

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B. HOUSEKEEPING

1. General appearance as to orderliness................ S A U
2. Adequate and proper storage space for tools and materials. S A U
3. Benches are kept orderly............................ S A U
4. Corners are clean and clear......................... S A U
5. Special tool racks, in orderly condition, and provided at benches and machines.................................. S A U
6. Tool, supply, and/or material room is orderly........ S A U
7. Sufficient scrap boxes are provided.................. S A U
8. Scrap stock is put in scrap boxes promptly........... S A U
9. Materials are stored in an orderly and safe condition.. S A U
10. A spring lid metal container is provided for waste and oily rags. S A U
11. All waste materials and oily rags are promptly placed in the containers .... S A U
12. Containers for oily rags and waste materials are frequently and regularly emptied .... S A U
13. Dangerous materials are stored in metal cabinets..... S A U
14. Machines have been color conditioned................ S A U
15. Safety cans are provided for flammable liquids....... S A U
16. Bulk storage of dangerous materials is provided outside of the main building .... S A U
17. A toe-board or railing around a mezzanine used for storage or washing facilities .... S A U
18. Materials are stored in an orderly and safe condition on this mezzanine .... S A U
19. Flammable liquids are not used for cleaning purposes S A U
20. Floors are free of oil, water and foreign material..... S A U
21. Floors, walls, windows, and ceilings are cleaned periodically. S A U
22. ____________________________________ S A U
23. ____________________________________ S A U
24. ____________________________________ S A U
25. ____________________________________ S A U
26. Evaluation for the total rating for B. HOUSEKEEPING S A U

C. EQUIPMENT

1. Machines are arranged so that workers are protected from hazards of other machines, passing students, etc.................. S A U
2. Danger zones are properly indicated and guarded..... S A U
3. All gears, moving belts, etc., are protected by permanent enclosure guards .... S A U
4. All guards are used as much as possible.............. S A U

C. EQUIPMENT (continued)

5. All equipment control switches are easily available S A
6. All machines are "locked off" when instructor is out of the re S A
7. Brushes are used for cleaning equipment............. S A
8. Nonskid areas are provided around machines......... S A
9. Machines are in safe working condition.............. S A
10. Machines are guarded to comply with American Standards sociation and local state code........................ S A
11. Adequate supervision is maintained when students are using chines and dangerous tools.......................... S A
12. Tools are kept sharp, clean and in safe working order S A
13. All hoisting devices are in safe operating condition... S A
14. Machines are shut off while unattended.... .... S A
15. Adequate storage facilities for tools, equipment, etc., not in mediate use .... S A
16. ____________________________________ S A
17. ____________________________________ S A
18. ____________________________________ S A
19. ____________________________________ S A
20. Evaluation for the total rating for C. EQUIPMENT. [illegible] A

D. ELECTRICAL INSTALLATION

1. All switches are enclosed........................... S A
2. There is a master control switch for all of the electrical insta tions .... S A
3. Electrical outlets and circuits are properly identified.. S A
4. All electrical extension cords are in safe condition and are carrying excessive loads.............................. S A
5. All machine switches are within easy reach of the operators. S A
6. Electrical motors and equipment are wired to comply with National Electric Code................................ S A
7. Individual cut-off switches are provided for each machine. S A
8. Machines are provided with overload and underload controls magnetic pushbutton controls........................... S A
9. No temporary wiring in evidence..................... S A
10. ____________________________________ S A
11. ____________________________________ S A
12. ____________________________________ S A
13. ____________________________________ S A
14. Evaluation for the total rating for D. ELECT[illegible] I. STALLATION .... S A

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E. GAS

1. Gas flow to appliances is regulated, so that when appliance valve is turned on full, the flames are not too high............ S A U

2. Gas appliances are properly insulated with asbestos or other insulating material from tables, benches, adjacent walls, or other flammable materials .... S A U

3. No gas hose is used where pipe connections could be made. S A U

4. Gas appliances have been adjusted so that they may be lighted without undue hazard.................................. S A U

5. Students have been instructed when lighting gas appliances to light the match first before turning on the gas............ S A U

6. There are no gas leaks, nor is any odor of gas detectable in any part of the shop.. S A U

7. Shop instruction has been given concerning the lighting of gas furnaces operating with both air and gas under pressure.. S A U

8. When lighting the gas forge, goggles are worn....... S A U

9. When lighting the gas furnace, the following procedure is used: (a) light the match; (b) turn on the gas; (c) drop the match in the hole in top of the furnace.............................. S A U

10. In shutting down the gas furnace, the gas valve is closed before the air valve.. S A U

11. ______________________________ S A U

12. ______________________________ S A U

13. ______________________________ S A U

14. ______________________________ S A U

15. Evaluation for the total rating for E. GAS.......... S A U

F. PERSONAL PROTECTION

1. Goggles or protective shields are provided and required for all work where eye hazards exist.......................... S A U

2. If individual goggles are not provided, hoods and goggles are properly disinfected before use........................ S A U

3. Shields and goggles are provided for electric welding.. S A U

4. Rings and other jewelry are removed by pupils when working in the shop.. S A U

5. Proper kind of wearing apparel is worn and worn properly for the job being done.................................. S A U

6. Leggings, safety shoes, etc., are worn in special classes such as foundry, etc., when needed........................ S A U

7. Respirators are provided for dusty or toxic atmospheric conditions such as when spraying in the finishing room......... S A U

8. Provisions are made for cleaning and sterilizing respirators. S A U

9. Students are examined for safety knowledge ability.. S A U

10. Sleeves are rolled above elbows when operating machines. S A U

11. Clothing of students is free from loose sleeves, flopping ties, loose coats, etc. .... S A U

12. ______ S A U

F. PERSONAL PROTECTION (continued)

13. ______________________________ S A U

14. ______________________________ S A U

15. ______________________________ S A U

16. Evaluation for the total rating for F. PERSONAL PROTECTION. S A U

G. INSTRUCTION

1. Shop Safety is taught as an integral part of each teaching unit. S A U

2. Safety rules are posted particularly at each danger station. S A U

3. Printed safety rules are given each student.......... S A U

4. Pupils take a safety pledge............................ S A U

5. Use of a safety inspector.............................. S A U

6. Use of a student shop safety committee.............. S A U

7. Use of safety contests.................................. S A U

8. Motion and/or slide films on safety are used in the instruction. S A U

9. Use of suggestion box.................................. S A U

10. Use of safety tests.................................... S A U

11. Use of safety posters.................................. S A U

12. Talks on safety are given to the classes by industrial men. S A U

13. Tours are taken of industrial plants as a means of studying safety practices .... S A U

14. Periodic safety inspections of the shop are made by a student committee .... S A U

15. Men from industry make safety inspections of the shop S A U

16. Student shop safety committee investigates all accidents S A U

17. A proper record is kept of safety instructions which are given, preferably showing the signature of student on tests given in this area .... S A U

18. Rotate students on the Shop Safety Committee so that as many students as possible have an opportunity to participate... S A U

19. ______________________________ S A U

20. ______________________________ S A U

21. ______________________________ S A U

22. ______________________________ S A U

23. Evaluation for the total rating of G. INSTRUCTION S A U

H. ACCIDENT RECORDS

1. There is a written statement outlining the proper procedure when and if a student is seriously hurt........................ S A U

2. Adequate accident statistics are kept................. S A U

3. Accidents are reported to the proper administrative authority by the instructor .... S A U

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H. ACCIDENT RECORD (continued)

4. A copy of each accident report is filed with the State Department of Education .... S A U

5. Accident reports are analyzed for instructional purposes and to furnish the basis for elimination of hazards............... S A U

6. ________________________________ S A U

7. ________________________________ S A U

8. ________________________________ S A U

9. ________________________________ S A U

10. Evaluation for the total rating of H. ACCIDENT RECORDS. S A U

I. FIRST AID

1. An adequately stocked first aid cabinet is provided... S A

2. The first aid is administered by a qualified individual S A

3. The school has individuals qualified to administer first aid. S A

4. ________________________________ S A

5. ________________________________ S A

6. ________________________________ S A

7. ________________________________ S A

8. Evaluation for the total rating of I. FIRST AID.... S A

RECOMMENDATIONS

Code No.	

For additional copies in packets of 30 send $1.42 to National Safety Council, 444 North Michigan Avenue, Chicago, Ill. 60611

Revd. 6/78
Req. 10M57601

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C.I.P. PROGRAM DESCRIPTION

46.0000 Construction Trades

A summary of groups of instructional programs that prepare individuals to erect, install, maintain, and repair buildings, highways, airports, missile sites, and other structures using materials such as metal, wood, stone, brick, glass, concrete, and composition substances. Includes instruction in cost estimating; cutting, fastening, and fitting various materials; the use of hand and power tools; and in following technical specifications and blueprints.

Course 01 Construction - On-Site

An approved instructional program that prepares individuals in the accomplishment of the tasks for CIP Code 46.0000 where a product or service is rendered to certain private individuals or public sectors of the surrounding community. The most frequent products of this activity are residential housing units which are sold by the LEA or a third party. Included in this code are programs dealing specifically with residential house construction, modular home, or shed building where such units are sold at a set price or on a bid price system. This code also deals with renovation or add on types of construction where building supplies and/or materials are provided or donated for use in a permanent structure or product.

Course 02 Construction - In-School

An approved instructional program that prepares individuals in the accomplishment of the tasks for CIP Code 46.0000 utilizing the mock-up, build-up, teardown concept of instruction. Included in this definition would be programs specifically dealing with simulation of residential and commercial construction, in a school setting, with experience gained in wall building, wiring, roofing, masonry, concrete work, tools of the trade and all other skills which may be acquired in a classroom or laboratory setting. An in-school program is a higher cost program because the building materials are consumed on a one-time basis which necessitates the purchasing of significant materials for each section. The materials are not sold, but are utilized in the natural course of instruction.

46.0102 Masonry

An approved instructional program that prepares individuals to lay bricks and/or blocks. Includes instruction in laying out and/or spacing bonds; determining vertical and horizontal alignment of courses using gauges, plumb-bobs, and levels; and cutting, notching, and shaping blocks, bricks, terra-cotta veneer, glass, and stone to construct or repair walls, partitions, arches, sewers, and fireplaces. Included in this program is training in reading architectural plans, planning, and estimating.

VOCATIONAL COOPERATIVE EDUCATION

Definition

"The term 'cooperative education' means a program of vocational education for persons who, through written cooperative arrangements between the school and employers, receive instruction, including required academic courses and related vocational instruction by alternation of study in school with a job in any occupational field, but these two experiences must be planned and supervised by the school and employers so that each contributes to the student's education and to his or her employability. Work periods and school attendance may be on alternate half days, full days, weeks, or other periods of time in fulfilling the cooperative program." (P.L. 94-482)

Responsibilities of School District

The local school district must meet all the Federal requirements of P.L. 94-482, Section 122; 45 CFR 104.531 through 104.533 and the State of Michigan Statutes and General School Laws listed below:

A. IT IS A PROGRAM OF VOCATIONAL EDUCATION.

"Vocational program" means laboratory, simulation or instruction based upon individually designed learning experiences in a vocational subject preparing the student for competencies required in a recognized occupation coded in accordance with the most recent vocational education listing of programs by the United States Department of Education.

B. THERE IS A WRITTEN AGREEMENT BETWEEN THE SCHOOL AND EMPLOYERS.

The Youth Employment Standards Act (P.A. 90 of 1978) governs the legal employment of minors in Michigan. In section 18 of the Act, a provision is made to allow a written agreement, or contract, to be entered into between an employer and the board of education of the school district, in which the minor is enrolled. This written agreement exempts a student from obtaining a work permit and allows the student to be legally employed in Michigan. The employment, however, shall not be in violation of a Federal Statute or regulation and a signed copy of the agreement shall be on file in the place of employment before a minor begins employment. The training agreement, in cooperative education, is the legal written agreement developed cooperatively between the employer, teacher-coordinator, student, and parent and outlines the responsibilities of the employer and student to the program and establishes the legal conditions of the student-learner's employment.

C. THERE IS INSTRUCTION (INCLUDING REQUIRED ACADEMIC INSTRUCTION) IN SCHOOL RELATED TO THE JOB IN ANY OCCUPATIONAL AREA.

The program is of sufficient duration to develop competencies necessary to prepare the learner for employment. It provides a coordinated instructional program combining supervised part-time employment and classroom instruction related to the learner's job. Related vocational instruction for cooperative education enrollees shall be scheduled weekly.

D. THE ALTERNATION OF STUDY AND WORK ARE PLANNED AND SUPERVISED BY THE SCHOOL AND EMPLOYER IN ORDER TO FURTHER THE STUDENT'S EDUCATION AND EMPLOYABILITY.

The student-learner shall be employed for an average of not less than 15 hours per week during the effective time of the individual's program. The school shall have the responsibility of providing coordination and supervision services during such time.

E. STUDENTS ARE EMPLOYED AND COMPENSATED IN CONFORMITY WITH FEDERAL, STATE AND LOCAL LAWS.

The program provides cooperative on-the-job training that (1) employs and compensates student-learners in conformity with Federal, State, and local laws and regulations and in a manner not resulting in exploitation of the student-learner for private gain, and (2) is conducted in accordance with written training agreements between local education agencies and employers.

References

Individuals requiring additional information pertaining to cooperative education principles and practices are asked to consult the Michigan Department of Education, Vocational-Technical Education Service, developed Cooperative Education Handbook available in September of 1981.

WORK EXPERIENCE

PAID WORK EXPERIENCE

Definition

Paid work experience programs are school-sponsored and supervised employment programs. Students are allowed to earn academic credit while employed in the community. The employment serves as a means of acquiring desirable work habits and attitudes towards the world of work. The employment is not necessarily related to a student's career interest and enrollment in a related vocational education program is not required.

Objectives

Paid work experience programs are designed to provide students an opportunity to:

1. Foster positive attitudes about work, school and society
2. Promote an understanding in the dignity of work
3. Develop a student's ability to understand and function in an employer-employee relationship
4. Earn wages to remain in school
5. Experience an alternative to the traditional school program

Guidelines

1. Written work agreements should be completed between the employer, student, parent and school
2. Written work agreements should be completed in conformance to all Federal, State and local laws, rules and regulations; including non-discrimination against any student because of race, color, sex, national origin or ancestry. This policy of non-discrimination shall also apply to otherwise qualified handicapped individuals
3. Related academic instruction, where possible, should be provided
4. A school work experience coordinator should be provided to serve as a liaison between the student, employee, parents and school officials
5. Academic credit should be awarded for participation in the program

Funding

The Michigan Department of Education, the Vocational-Technical Education Service does not fund paid work experience programs.

UNPAID WORK EXPERIENCE

Definition

Unpaid work experience is a school sponsored and supervised instructional technique used in vocational education programs in which students are placed with an employer for a limited time and are not compensated during the duration of the experience.

Objectives

Unpaid work experience programs are designed to provide students with an opportunity to:

1. Receive on-site exposure to various businesses and industries while participating in a related vocational education program
2. Develop a realistic understanding of the relationship between education and the world of work
3. Enhance a positive self-image
4. Assist in the selection of occupational choices
5. Expand learning opportunities by using community resources

Guidelines

1. The training, even though it includes actual operation of the facilities of the participating employer is similar to that given in a vocational school
2. The training is for the benefit of the trainee
3. The trainee does not displace a regular employee, but does work under a regular employee's close observation
4. The participating employer does not derive an immediate advantage from the activities of the trainee
5. The trainee is not necessarily entitled to a job at the conclusion of the training period
6. The trainee is not entitled to wages for the time spent in the training
7. The training is for not more than 45 hours with a participating employer during each school semester
8. The training is conducted under a written work experience training agreement between the school district and the participating employer

Funding

The Michigan Department of Education, the Vocational-Technical Education Service does not fund unpaid work experience but considers it to be an allowable instructional activity under a given vocational education program.

WORK EXPERIENCE AND CAREER EXPLORATION PROGRAM
(W.E.C.E.P.)

I. Definition

The Work Experience and Career Exploration Program (W.E.C.E.P.) is a school-supervised and administered program that includes part-time work as an integral part of an educational program aimed at motivating 14 and 15 year-old youth toward education and preparing them for the world of work.

II. Program Objectives

There are several objectives of a W.E.C.E.P. program:

A. To provide a career-oriented educational program for dropout prone youth to become oriented and motivated toward education and the world of work.

B. To increase the desire to learn and improve educational performance.

C. To develop a greater degree of self-confidence, responsibility and aid in the maturation process of the student participants.

D. To provide student participants with on-the-job learning experiences that are in harmony with their interests, needs and objectives.

E. To improve school adjustment of student participants for whom the traditional curriculum is found to be inadequate.

F. To promote personal and social adjustment of the student participants and establish emotional stability through a feeling of being engaged in worthwhile activity.

III. Instructional Content

W.E.C.E.P. programs are planned so as to include part-time work supervised by employers and school personnel, as an integrated part of the enrollee's educational program. Students receive work experience on jobs permitted or approved under Federal or State laws. Students are in class with a W.E.C.E.P. teacher-coordinator for job-related and occupational safety, including needed individualized or remedial instruction. Students also receive a minimum of 20 hours of instruction on the Michigan Occupational Information System (MOIS) and a minimum of 30 hours of employability skills instruction. The students' employment is under the supervision of W.E.C.E.P. teacher-coordinators and employers. Students receive all State required courses necessary for graduation. The W.E.C.E.P. program is planned so that the students' individual academic achievement potential is recognized.

IV. Program Organization

The Vocational-Technical Education Service, Michigan Department of Education requires that W.E.C.E.P. programs in local districts meet the following criteria:

A. Eligibility. Any student aged 14 or 15 years, whom authoritative local school personnel identify as being able to benefit from the program, shall be eligible to participate.

B. Credits. Students shall receive school credits for both in-school related instruction and on-the-job experience.

C. Size. Each program unit shall consist of 12 to 25 students to one W.E.C.E.P. teacher-coordinator.

D. Instructional Schedule. W.E.C.E.P. students will spend a minimum of four periods daily in classroom instruction including one period of 180 hours of instruction devoted to job-related and employability skill instruction, safety and career exploration. Each student will have a minimum of 20 hours of career exploration utilizing the Michigan Occupational Information System (MOIS) and have a minimum of 30 hours of instruction in employability skills training. The employability skills training will equal or exceed the employability skills performance objectives adopted, as part of Michigan Vocational-Technical Service programs. Each local district submitting a letter of application to operate a W.E.C.E.P. program will furnish to the Vocational-Technical Education Service a course outline for the related class.

E. W.E.C.E.P. Teacher-Coordinator. Each program unit shall be under the supervision of a school official to be designated for the purpose of the program as a W.E.C.E.P. teacher-coordinator, who shall generally supervise the program and coordinate the work and education aspects of the program and make regularly scheduled visits to the work stations.

F. Written W.E.C.E.P. Training Agreement. No student shall participate in the program until there has been made a written W.E.C.E.P. training agreement signed by the W.E.C.E.P. teacher-coordinator, the employer and the student. The agreement shall also be signed or otherwise consented to by the student's parent or guardian. The W.E.C.E.P. training agreement will detail job tasks and related in-school instruction. A sample W.E.C.E.P. training agreement will be submitted annually by the local district to the Vocational-Technical Education Service.

G. Provision for Health and Well-Being. Employment under W.E.C.E.P. will not interfere with the schooling of the minors or with their health and well-being.

H. Records and Reports. The names and addresses of each school and the names and addresses of each employer enrolling work experience and career exploration program students and the number of enrollees in each unit shall be kept at the Vocational-Technical Education Service's office. A copy of the written W.E.C.E.P. training agreement for each student participating in the program shall be kept in the local educational office. The records required (for this paragraph) shall be kept for a period of three years from the date of enrollment in the program and shall be made available for inspection or transcription to the representatives of the Administrator of the Wage and Hour Division. Each school district operating a W.E.C.E.P. program shall submit an annual evaluative report by June 30th, which details the results of the W.E.C.E.P. program in terms of attendance and tardiness patterns, grade point average trends and dropout statistics of the enrollees. Based on a favorable state agency evaluation, a local district will be approved on an annual basis to operate a W.E.C.E.P. program. Under no circumstances can a local district operate a W.E.C.E.P. program without first obtaining written state agency approval for the program.

I. Approved Occupations. Employment of minors enrolled in a W.E.C.E.P. program approved pursuant to the requirements of this section shall be permitted in all occupations except the following:

1. Manufacturing and mining.

2. Occupations declared to be hazardous for the employment of minors between 16 and 18 years of age in Subpart E of Part 570 Child Labor Regulations, Orders and Statements of Interpretation of the Federal Fair Labor Standards Act, and occupations in agriculture declared to be hazardous for employment of minors below the age of 16 in Subpart E-1 of this part.

3. Occupations other than those permitted under sections 570.33 and 570.34 except upon approval of a variation in individual cases or classes of cases by the Administrator of the Wage and Hour Division after notice to interested persons and opportunity to be heard.

Employment of minors enrolled in a W.E.C.E.P. program approved pursuant to the requirements of this section shall be confined to not more than 23 hours in any week when school is in session and not more than three hours in any day when school is in session, any portion of which may be during school hours.

Employment of W.E.C.E.P. participants must not have the effect of displacing a worker in the establishment of the employer. Participants in W.E.C.E.P. must be paid according to the statutory minimum wage provision of the Fair Labor Standards Act.

V. Approval of Local Programs

Local school districts desiring approval to operate a W.E.C.E.P. program must submit an annual letter of application by June 30th to the

Michigan Department of Education
Vocational-Technical Education Service
Secondary Unit
Box 30009
Lansing, MI 48909
(517) 373-3365

VOCATIONAL WORK-STUDY

Definition and Purpose

The vocational work-study program is for those students who are in need of earnings from employment in order to commence or continue their vocational education programs.

Administration

The work-study program shall be administered by local educational agencies and made available, to the extent of available funds, to all qualified youth, in the area served by such agencies, who meet requirements.

Eligible Students

Employment under the work-study program shall be furnished only to a student who (a) has been accepted for enrollment or, if already enrolled, is in good standing and in full time attendance as a full-time student in a vocational education program which meets the standards of the state board and of the local educational agency and the requirements of the state plan, (b) is in need of the earnings from such employment to commence or continue a vocational education program, and (c) is at least 15 years of age and less than 21 years of age at the date of commencement of employment and is capable in the opinion of the appropriate school authorities of maintaining good standing in a school program while employed under the work-study program.

Limitation of Hours and Compensation of Employment

No student shall be employed under a vocational work-study program for more than 20 hours in any week in which classes in which the student is enrolled are in session. Summer employment shall not exceed 40 hours per week.

Employers

Employment under work-study programs shall be for the local educational agency or for some other public agency or institution, federal, state, or local and work so performed shall be adequately supervised and coordinated and shall not supplant present employees of such agency or institution who ordinarily perform such work. In those instances where employment under work-study programs is for a federal agency or institution, the written arrangement between the local educational agency and the federal agency or institution shall state that students so employed are not federal employees for any purpose.

Amounts Spent for Employment

In each fiscal year during which the work-study program remains in effect, the local educational agency shall expend for employment of its students an amount in state and/or local funds that is not less than the average annual expenditure for work-study programs of a similar nature during the three fiscal years preceding in which the supplementary plan provisons for its work study program are approved.

Applications, Priorities, and Approval

Work-study programs shall be approved on an individual basis by the state board and shall be consistent with the policies and procedures set forth.

Applications by Local Educational Agencies

Local educational agencies shall submit project proposals to the state board staff for approval in a manner similar to other vocational education programs.

Priority of Projects

Work-study programs will be provided, insofar as financial resources are available, for the undertaking of such programs in the order determined by the application of criteria for determining relative priority of projects which shall include preference for local educational agencies serving communities having substantial numbers of dropouts and unemployed youths and may include other relevant factors such as the extent to which the local educational agencies are using guidance and counseling and other related services designed to achieve the purposes of the work-study program.

MASONRY
JOB TITLES

D.O.T.	JOB TITLE
844.364-010	Cement Mason
861.381-018	Brick Layer

DUTY/TASK - JOB MATRIX

DUTY/TASK NUMBER

JOB TITLE																

TASK LISTING
FOR
MASONRY

A. CONSTRUCTING FOUNDATIONS

1. Estimate forming materials using appropriate tools and equipment to ensure adequate material to complete the job.

2. Estimate concrete using appropriate tools and equipment to ensure adequate material to complete the job.

3. Calculate concrete for footings and foundation walls using appropriate tools and equipment to ensure adequate materials to complete the job.

4. Estimate concrete block using appropriate tools and equipment to ensure adequate material to complete the job.

5. Construct footing form using appropriate tools and equipment to hold the concrete.

6. Install keyway for footing and foundation using appropriate tools and equipment to ensure a water stop and prevent wall/footing movement.

7. Construct "T" type footing using appropriate tools and equipment to ensure footings on solid ground below the frost line.

8. Design footing for soil conditions using appropriate tools and equipment to provide adequate support for structure.

9. Install water seal at footing elevation using appropriate tools and equipment to ensure a dry interior area.

10. Supervise the installation of drainage systems for footings and foundations using appropriate tools and equipment to enable ground water a path away from the foundation.

11. Identify requirements and restrictions using appropriate resources to comply with local zoning laws and rules.

12. Strip form using appropriate tools and equipment to remove form products and expose the concrete.

13. Align form walls using appropriate tools and equipment to provide smooth straight walls.

14. Install walers and form ties using appropriate tools and equipment to hold the forms together.

15. Brace foundation wall forms using appropriate tools and equipment to ensure straight walls.

A. CONSTRUCTING FOUNDATIONS (continued)

16. Construct double wall panel foundation forms using appropriate tools, equipment, and forms to ensure straight and smooth walls.

17. Construct box for special opening using appropriate tools and equipment to allow for an area without concrete in it.

18. Construct piers using appropriate tools and equipment to provide support for later construction.

19. Construct wall containing pilasters using appropriate tools and equipment to provide additional support for the wall.

20. Construct single wall foundation form using appropriate tools and equipment to provide a cavity for the concrete.

21. Construct stud and sheathing wall form using appropriate tools and equipment to provide a cavity for concrete.

22. Erect plywood panel wall form using appropriate tools and equipment to provide a cavity for concrete.

23. Erect manufactured wall form using appropriate tools and equipment to provide a cavity for concrete.

24. Form intersecting walls at corners using appropriate tools and equipment to allow a change in direction of the walls.

25. Make frame for pocket using appropriate tools and equipment to receive heavy beams in concrete walls.

26. Attach wooden beams or steel beams to wood or steel columns using appropriate tools and equipment to hold up the beams.

27. Install door and window opening bucks using appropriate tools and equipment to provide openings in the concrete.

28. Install expansion and contraction joint in concrete slab using appropriate tools and equipment to allow control of concrete movement.

29. Install anchor bolt in concrete using a bolt to provide a method of securing future construction to the concrete.

30. Install anchor bolt in concrete block using a bolt to provide a method of securing future construction to the blocks.

31. Install vapor barriers using appropriate tools and equipment to provide a damp proofing of the area.

32. Waterproof concrete block wall using appropriate tools and equipment to prevent water penetration.

A. CONSTRUCTING FOUNDATIONS (continued)

33. Clean and repair forms using appropriate tools and equipment to allow reuse and smooth surfaces during next pour.

34. Construct concrete step and stair forms using appropriate tools and equipment to provide a means of travel from one level to another.

35. Construct stair forms using appropriate tools and equipment to provide a means of travel from one level to another.

36. Install bulkhead using appropriate tools and equipment to provide a pathway or dropped area.

37. Install expansion and contraction joint in concrete walls using appropriate tools and equipment to allow control and concrete movement.

38. Screed concrete in forms using appropriate tools and equipment to provide a level and true surface for sill plates.

39. Furr masonry walls using appropriate tools and equipment to provide a means of support for further wall coverings.

B. WORKING WITH FLAT CONCRETE

1. Compute materials using plans and specifications to estimate material needs for footing forms.

2. Compute materials using plans and specifications to estimate accurate amount of concrete required.

3. Order materials using previous estimates to supply materials for job.

4. Form concrete pads using appropriate tools and equipment to prepare project.

5. Mix concrete using directions and handtools to prepare concrete for the job.

6. Mix concrete using directions and power mixer to prepare concrete for the job.

7. Set screeds using directions and appropriate screed material to provide necessary grade and level.

8. Install expansion and contraction joints using trade accepted materials and methods to meet all possible size fluctuations.

9. Pour concrete using established methods and tools to deliver concrete to proper formed area.

B. WORKING WITH FLAT CONCRETE (continued)

10. Pour concrete using appropriate tools and equipment to fill forms.

11. Place concrete using established methods and tools to spread concrete throughout formed area.

12. Finish concrete using appropriate tools and equipment to achieve desired surface quality.

13. Screed concrete using established methods and tools to level concrete throughout formed area.

14. Float concrete using established methods and tools to smooth concrete surface.

15. Vibrate concrete using established methods and tools to consolidate aggregate within concrete.

16. Finish concrete using hand float, edger, hand trowel, and established method to refine surfaces and edges.

17. Finish concrete using established methods and power trowel to refine floated surfaces.

18. Apply shielding agent using appropriate curing methods and/or materials to protect curing concrete.

19. Install reinforcement using appropriate materials to strengthen concrete structure.

20. Rub formed surfaces using wood or stone smoothing block to finish concrete surfaces.

C. HELPING MASON

1. Set up power mixer using instructed method to prepare mortar for masonry job.

2. Maintain power mixer using solvents and tools to assure that mixer is in working condition.

3. Carry materials using instructed method to place block and brick at designated areas.

4. Set up and dampen mortar board using instructed method to prepare board in order to hold mixed mortar.

5. Stock and temper mortar using instructed methods to provide mason with mortar of proper consistency.

6. Set up and level scaffolding using proper methods and materials to provide mason a safe work area.

C. HELPING MASON (continued)

7. Stack scaffolding using proper methods and materials to provide mason work area of proper height.

8. Maintain work area using instructed methods to keep area safe and organized.

9. Maintain materials using instructed methods to protect from affects of weather.

10. Compact fill area using power compactor to assure that fill area will not shift or settle.

D. CONSTRUCTING BRICK BUILDINGS

1. Lay out brick wall using instructed methods to prepare the area for masonry work.

2. Bond brick wall using correct measurements to prepare each course of masonry.

3. Build leads and lay to the line using appropriate tools and methods to construct brick veneer wall.

4. Cut brick using masonry saw or brick set to achieve correct brick size for formation of wall.

5. Measure brick wall using spacing rule or module rule to gauge correct linear dimensions.

6. Measure brick wall using story pole to gauge proper height dimensions.

7. Form a corbel using proper tools and methods to strengthen or enhance masonry structure.

8. Clean brick wall using commercially available materials to complete finished wall.

9. Calculate amount of materials using formula to estimate material needs for job.

E. CONSTRUCTING CONCRETE BLOCK BUILDINGS

1. Mix mortar materials using hand tools to prepare mortar for block job.

2. Mix mortar materials using power mixer to prepare mortar for block job.

3. Calculate quantity/blocks using formula to meet job requirements.

E. CONSTRUCTING CONCRETE BLOCK BUILDINGS (continued)

4. Estimate mortar using product recommendations to meet job requirements.

5. Transfer lines using established methods/dimensions to locate building on prepared footings.

6. "Bond out" course of blocks using visual estimation, brick rule and actual placement of blocks to determine proper horizontal placement of blocks.

7. Lay out openings using proper measuring tools to determine locations of pilaster, chase, doors and windows in block walls.

8. Position openings using proper measuring tools to determine locations of pilaster, chase, doors and windows in block walls.

9. Gauge masonry wall using a story pole to determine proper vertical spacing of blocks.

10. Gauge masonry wall using modular rule to determine proper vertical spacing of masonry.

11. Gauge corner starting points using transit to determine level locations on story pole/building shell.

12. Adjust measurement of concrete leads using line, proper math skills, and mortar to establish corner points that match each other.

13. Lay up concrete leads using line, proper math skills, and mortar to establish corner points that match each other.

14. Lay up concrete blocks using masonry tools and line to complete course of blocks.

15. Cut concrete blocks using brick set or masonry saw to provide opening in blocks.

16. Apply reinforcement using commercial reinforcement materials to strengthen block structure vertically and horizontally.

17. Joint and point block walls using proper masonry tools to refine appearance of mortar joints.

18. Apply wall ties using commercial materials to connect existing structure and masonry materials.

19. Install door buck using rough opening measurements and trade accepted materials to prepare door rough opening for door installation.

20. Install window bucks using rough opening measurements and trade accepted materials to prepare window rough opening for window installation.

E. CONSTRUCTING CONCRETE BLOCK BUIIDINGS (continued)

21. Install reinforced lintels using commercially fabricated materials to support structure over windows or doorways.

22. Calculate amount of anchor bolts using code requirement formula to estimate material needs for job.

23. Specify size and number of anchor bolts using code requirement and estimate to meet job requirements.

24. Install anchor bolts using tape measure to mark locations to meet job requirements.

25. Apply parging using commercial methods to form moisture barrier.

26. Apply coating using bituminous type commercial material to form moisture barrier.

F. CONSTRUCTING RESIDENTIAL CHIMNEYS AND FIREPLACES

1. Calculate fireplace supplies using proper formulas to estimate materials needed for job.

2. Lay out, form and pour fireplace pad using proper measurements and tools to construct basis for masonry chimney and fireplace.

3. Install ash dumb using proper methods and tools to provide means to clean chimney.

4. Install clean out door using proper methods and tools to provide means to clean chimney.

5. Install a thimble using proper methods and tools to connect the device to chimney.

6. Install flue liner using proper methods and tools to construct a safer chimney.

7. Cut flue liner using proper methods and tools to achieve correct size prior to liner application.

8. Rough in hearth and bottom of fireplace using proper methods and tools to construct the firebox.

9. Set prefabricated firebox using proper methods and tools to install the unit.

10. Set zero clearance prefabricated fireplace unit using proper methods and tools to install unit.

11. Bond brick using brick and measurements to prepare fireplace.

F. CONSTRUCTING RESIDENTIAL CHIMNEYS AND FIREPLACES

12. Measure for hot and cold air openings using measuring tools to lay out openings for grills.

13. Lay brick or stone using proper materials, tools and methods to form fireplace face.

14. Lay brick or stone using proper materials, tools and methods to form a hearth.

15. Install mantel material using proper tools and methods to provide mantel.

16. Apply flashing using proper tools and methods to form weather proof chimney shield.

17. Install ducts and fans using proper tools and methods to provide circulation system.

18. Install protective device using proper materials, tools and methods to cap off chimney.

19. Apply wall ties using proper materials, tools and methods to anchor chimney.

20. Calculate flashing materials using formula to estimate and specify material needs.

G. USING EMPLOYABILITY SKILLS

1. Investigate employment information using sources of employment information to identify employment opportunities.

2. Identify job requirements using health, physical, legal, education, and other occupational information to determine the requirements of an occupation.

3. Acquire wage information using available resources to determine the approximate entry wages, general wage range, and significant fringe benefits for an occupation,

4. Identify significant non-wage job characteristics using available resources to determine shift requirements, union affiliation, apprenticeships, occupational hazards, characteristics of work environment and other significant job factors.

5. Explore employment opportunities using available resources to describe local, regional, and national employment opportunities for an occupation.

6. Analyze career ladder using available resources to describe job progression in an occupation.

G. USING EMPLOYABILITY SKILLS (continued)

7. Identify personal criteria with information about available alternatives using a decision-making situation and procedures and skills in decision-making to choose a job, further training or other alternatives.

8. Prepare a resume using personal information to apply for a job.

9. Write a letter of application using personal notes to apply/inquire about a job.

10. Complete a job application using personal notes to apply for a job.

11. Demonstrate appropriate dress using a knowledge of job requirements to comply with standards of on-the-job dress and grooming.

12. Complete a job interview using communication and interpersonal skills to become employed.

13. Describe personal criteria using references to identify acceptable job offers.

14. Demonstrate interpersonal skills to achieve successful relationships with others.

15. Identify source of continuing education for an occupation using available resources to identify career ladder alternatives.

16. Describe job termination procedures using a knowledge of the occupational area to leave a particular job.

Duty: Constructing Foundations

Duty No. A

Task No. 1

Task: Estimate forming materials using appropriate tools and equipment to ensure adequate material to complete the job.

Achievement Indicators:

The learner:	Yes	No
1. Measured perimeter of slab to determine linear feet of forms -	____	____
2. Determined depth of the slab forms from specifications -	____	____
3. Measured linear feet of footers -	____	____
4. Multiplied footer length by 2 and determined the linear feet of forms -	____	____
5. Determined the depth of footer from specifications -	____	____
6. Measured the height and width of the bulkhead and determined plywood or form size -	____	____

Criteria: Competence in the task will be recognized when the materials surround the perimeter of areas.

Tools and Equipment:

Resources:

Duty: Constructing Foundations

Duty No. A

Task No. 2

Task: Estimate concrete using appropriate tools and equipment to ensure adequate material to complete the job.

Achievement Indicators: The learner:

	Yes	No
1. Measured the length of area to the nearest inch -	____	____
2. Measured the width of area to the nearest inch -	____	____
3. Measured the depth of area to the nearest inch -	____	____
4. Converted inches to feet for all dimensions -	____	____
5. Calculated cubic yardage correctly -	____	____
6. Recorded calculations correctly -	____	____

Criteria: Competence in the task will be recognized when the volume of concrete is determined in cubic yards, sufficient to fill area with minimal excess.

Tools and Equipment:

Resources:

Duty: Constructing Foundations

Duty No. A

Task No. 3

Task: Calculate concrete for footings and foundation walls using appropriate tools and equipment, to ensure adequate material to complete the job.

Achievement Indicators: The learner:

	Yes	No
1. Determined the size of footings. Thickness X width X length -	____	____
2. Determined the size of foundation wall. Thickness X width X length -	____	____
3. Calculated the required amount of concrete used for footing -	____	____
4. Calculated the required amount of concrete used for the foundation walls correctly -	____	____
5. Combined the sub-totals into the total figure for the job. (5% excess acceptable when ordering concrete.) -	____	____

Criteria: Competence in the task will be recognized when the total amount of concrete needed for the job is calculated correctly.

Tools and Equipment:

Resources:

Duty: Constructing Foundations	**Duty No.** A **Task No.** 4

Task: Estimate concrete block using appropriate tools and equipment to ensure adequate material to complete the job.

Achievement Indicators: The learner:	Yes	No
1. Measured linear feet of the wall length -	____	____
2. Multiplied linear feet by 3/4 and determined the number of blocks per course -	____	____
3. Determined height of wall from plans -	____	____
4. Multiplied height by 1-1/2 and determined number of courses -	____	____
5. Multiplied (number of blocks per course) by (number of courses) and determined the total quantity of blocks that were used -	____	____

Criteria: Competence in the task will be recognized when the quantity of concrete blocks are determined.

Tools and Equipment:	**Resources:**

Duty: Constructing Foundations

Duty No. A

Task No. 5

Task: Construct footing form using appropriate tools and equipment to hold the concrete.

Achievement Indicators: The learner:	Yes	No
1. Determined the size of footing from plans -		
2. Measured and cut the stock to lengths -		
3. Set cut stock along perimeter of proposed footer -		
4. Nailed together -		
5. Checked form for level and elevation -		
6. Adjusted form as needed -		
7. Shoveled dirt around outside of form -		
8. Measured the width of the form -		
9. Cut furring to width of form plus 3" -		
10. Nailed the furring strips to the form -		

Criteria: Competence in the task will be recognized when the top edge of the forms are level with grade stake, and forms constructed of 1" board have stakes spaced 2' - 3' apart.

Tools and Equipment:	**Resources:**

Duty: Constructing Foundations

Duty No. A

Task No. 5

Task: Install keyway for footing and foundation using appropriate tools and equipment to ensure a water stop and prevent wall/footing movement.

Achievement Indicators: The learner:	Yes	No
1. Determined height and width of intended keyway from specifications -	____	____
2. Measured the width of foundation wall or footer -	____	____
3. Cut lumber to size and shape as specified in plans -	____	____
4. Added the secured handle -	____	____
5. Marked center of the keyway on footing -	____	____
6. Marked center of keyway on keyway -	____	____
7. Screeded the concrete -	____	____
8. Aligned center marks on footing and keyway concrete -	____	____
9. Pressed the key form into plastic concrete -	____	____
10. Lifted the keyway from green concrete after keyway is formed -	____	____
11. Repeated steps 7-10 until keyway was formed around entire footing -	____	____

Criteria: Competence in the task will be recognized when the keyway is the

Tools and Equipment:	**Resources:**

Duty: Constructing Foundations	**Duty No.** A **Task No.** 7

Task: Construct "T" type footing using appropriate tools and equipment to ensure footings on solid ground below the frost line.

Achievement Indicators: The learner: Yes No

1. Made stakes long enough and they extended above the top of the starter wall after they were driven into the ground - ____ ____
2. Cut starter wall form material to a width equal to the height of the starter wall - ____ ____
3. Cut hangers to fit between stakes - ____ ____
4. Nailed hangers and starting wall form material - ____ ____
5. Secured the block for the hanger and nailed the hangers to stakes - ____ ____
6. Checked forms to see that they were properly alinged and plumb - ____ ____
7. Used existing earth as form in center of forms - ____ ____

Criteria: Competence in the task will be recognized when the hangers, wall forms, blocks, and stakes are fastened together so that no movement or shift will take place as concrete is placed, and when forms are straight and plumb.

Tools and Equipment:	**Resources:**

Duty: Constructing Foundations	**Duty No.** A **Task No.** 8

Task: Design footing for soil conditions using appropriate tools and equipment to provide adequate support for structure.

Achievement Indicators: The learner:

The learner:	Yes	No
1. Used specifications of local code for basic standards -	____	____
2. Set depth of the footing below the local frost line -	____	____
3. Extended excavation to natural solid ground to insure stability -	____	____
4. Used a minimum thickness not less than one and one half times the footing projection -	____	____
5. Used side forms where conditions prevented shaped trenches (ditches) -	____	____
6. Where footing required vertical steps the horizontal distance between steps was not less than 2 feet and did not exceed 3/4 of the horizontal distance between steps -	____	____
7. Made vertical connections the same width that the footing and not less than the 6 inches in thickness -	____	____
8. Reinforcement was required according to HUD Minimum Standard 601-162 section D -	____	____

Criteria: Competence in the task will be recognized when the following comply: footing is below the frostline. excavation is extended to solid ground, the footing thickness is not less than one and one-half times the width of the footing, and reinforcements are inserted as specified.

Tools and Equipment:	**Resources:**

Duty: Constructing Foundations

Duty No. A

Task No. 9

Task: Install water seal at footing elevation using appropriate tools and equipment to ensure a dry interior area.

Achievement Indicators: The learner:	Yes	No
1. Referred to plot plan, working drawings and specifications -	____	____
2. Installed the specified size and shape of tile at the required location of the footing -	____	____
3. Installed the specified type and amount of gravel fill -	____	____
4. Coated the footing and foundation wall with the specified type and amount of sealer -	____	____

Criteria: Competence in the task will be recognized when the seal is placed in accordance to specifications.

Tools and Equipment:

Resources:

Duty: Constructing Foundations	**Duty No.** A
	Task No. 10

Task: Supervise the installation of drainage systems for footings and foundations using appropriate tools and equipment to enable ground water a path away from the foundation.

Achievement Indicators: The learner:

Supervised the following activities:	Yes	No
1. Checked plans and found the specified elevation of the tile or other drainage material in relation to the footing -	____	____
2. Checked existing trench with builder's level or transit on terms of proper location, elevation and slope -	____	____
3. Placed the drain tile in the proper location -	____	____
4. Placed screens in position required -	____	____
5. Spread the gravel over tile to hold tile in correct position -	____	____
6. Completed fill with gravel according to the specifications -	____	____

Criteria: Competence in the task will be recognized when the tile and pipe are located at proper depth in relation to footing as indicated on working drawings, the proper slope is maintained in order that all water leads to a specific point, spacing is 1/4" ± is maintained and coarsenes and depth of the stone fill atrees with specifications.

Tools and Equipment:	**Resources:**

Duty: Constructing Foundations

Duty No. A

Task No. 11

Task: Identify requirements and restrictions using appropriate resources to comply with local zoning laws and rules.

Achievement Indicators: The learner: Yes No

1. Checked the local zoning documents for requirements and restrictions - ____ ____
2. Went over working drawings and checked for possible violations of codes - ____ ____
3. Cited any violations - ____ ____

Criteria: Competence in the task will be recognized when no violations of zoning laws (codes) exist.

Tools and Equipment:

Resources:

Duty: Constructing Foundations

Duty No. A

Task No. 12

Task: Strip form using appropriate tools and equipment to remove form products and expose the concrete.

Achievement Indicators: The learner:	Yes	No
1. Chipped away the concrete that had overflowed form -	____	____
2. Dug dirt away from the forms -	____	____
3. Removed and stored braces and stakes -	____	____
4. Removed batten strips -	____	____
5. Removed tie cleats and walers -	____	____
6. Drove pick underneath and end of form -	____	____
7. Pried up the form -	____	____
8. Repeated steps 6 and 7 for the remaining forms and worked from the center to corners -	____	____
9. Removed nails and connectors from boards -	____	____
10. Cleaned concrete form boards -	____	____
11. Brushed oil on the cleaned forms -	____	____
12. Stored forms -	____	____
13. Removed exposed portions of the wall ties -	____	____
14. Brushed and rustproofed reusable metal parts -	____	____
15. Stored metal parts -	____	____

Criteria: Competence in the task will be recognized when the form is pulled away from the concrete and did not put lateral pressure on the wall, and if the wall is free of nails and excess concrete.

Tools and Equipment:

Resources:

Duty: Constructing Foundations	**Duty No.** A **Task No.** 13

Task: Align form walls using appropriate tools and equipment to provide smooth straight walls.

Achievement Indicators: The learner:

	Yes	No
1. Used a plumb bob, and marked points on the footing directly below the established building line (outside face of wall) -	____	____
2. From these points, located the inside of the wall on the footing by snapping the chalk line on the footing. These lines extended the full length of the footing -	____	____
3. Set the wall form in position and installed bottom braces to hold the form secure on footing line -	____	____
4. The wall form was plumb vertically at each end (± 1/8" dimensions in 6') and installed the top braces at the corners -	____	____
5. Used block gauge and line to align the top and center section of wall form -	____	____
6. Located the stakes for top braces and installed braces to provide 30^{0} or less angle to horizontal -	____	____
7. Nailed all braces and support devices with doubleheaded form nails for ease of wrecking form -	____	____

Criteria: Competence in the task will be recognized when the wall is aligned to the required specifications, installing braces, and support devices.

Tools and Equipment:	**Resources:**

Duty: Constructing Foundations	**Duty No.** A
	Task No. 14

Task: Install walers and form ties using appropriate tools and equipment to hold the forms together.

Achievement Indicators: The learner:

	Yes	No
1. Referred to the working drawings and specifications -	____	____
2. Positioned and secured walers -	____	____
3. Determined type of ties and/or spreaders that were used, and their placement -	____	____
4. Placed and positioned ties and spreaders as the inside wall was built in place and completed forms were very high -	____	____
5. Fastened ties and/or spreaders to the outside and inside forms -	____	____
6. Positioned and tightened lock ties -	____	____
7. Positioned reinforcing rods as the ties and spreaders were being installed, if rods were required -	____	____
8. Checked all ties, spreaders, and braces for accuracy of placement and rigidity -	____	____

Criteria: Competence in the task will be recognized if the components are installed according to the type of tie.

Tools and Equipment:	**Resources:**

Duty: Constructing Foundations

Duty No. A

Task No. 15

Task: Brace foundation wall forms using appropriate tools and equipment to ensure straight walls.

Achievement Indicators: The learner: Yes No

1. Referred to the working drawings and specifications - ____ ____
2. Checked building layout lines on surface of footing - ____ ____
3. Set the sections of the outside wall form on the footing to conform to the layout lines - ____ ____
4. Leveled the top of forms by bringing shims under the sole plate of the forms - ____ ____
5. Drove stakes and braces to hold wall forms in place - ____ ____
6. Added walers and made outside wall form rigid - ____ ____
7. Completed bracking on the foundation wall forms - ____ ____
8. Checked the forms for accuracy before inserting the ties and spreaders - ____ ____
9. Inserted ties and spreaders on taller forms as inside form was built in place - ____ ____

Criteria: Competence in the task will be recognized when braces are constructed and secured to foundation walls.

Tools and Equipment:

Resources:

Duty: Constructing Foundations

Duty No. A

Task No. 16

Task: Construct double wall panel foundation forms using appropriate tools, equipment, and forms to ensure straight and smooth walls.

Achievement Indicators: The learner: Yes No

1. Spaced the forms along the perimeter of the excavated basement and determined the most desirable location - ____ ____
2. Snapped a chalk line for the exterior wall - ____ ____
3. Set walls in place. Nailed end studs together to form up the outside wall - ____ ____
4. Lined and braced the wall - ____ ____
5. Inserted snap ties into spaced holes. Moved the inside wall form into place and inserted the other end of the snap tie - ____ ____
6. Cut the required length of form and joined to form corners of the building - ____ ____
7. Set walers above and below the snap tie and locked them in place by using snap tie wedges - ____ ____
8. Lined and braced the forms. Checked the location of the building line from the batterboard - ____ ____
9. Installed the bulkheads at specified locations - ____ ____

Criteria: Competence in the task will be recognized when a constructed double wall panel form is complete with adequate braces and ties.

Tools and Equipment:

Resources:

Duty: Constructing Foundations

Duty No. A

Task No. 17

Task: Construct box for special opening using appropriate tools and equipment to allow for an area without concrete in it.

Achievement Indicators: The learner:

	Yes	No
1. Determined the dimensions and location of rough opening from plans -	____	____
2. Selected and measured stock to length -	____	____
3. Nailed framing member together	____	____
4. Checked for level and plumb and adjusted -	____	____
5. Measured and cut sheathing to size -	____	____
6. Nailed sheathing to frame -	____	____

Criteria: Competence in the task will be recognized when the box is tight and defect-free, and also aligned and easily removable.

Tools and Equipment:

Resources:

Duty: Constructing Foundations

Duty No. A

Task No. 18

Task: Construct piers using appropriate tools and equipment to provide support for later construction.

Achievement Indicators:

The learner:	Yes	No
1. Dimensioned, squared and marked area for pier -	____	____
2. The corner masonry unit was laid in mortar and leveled -	____	____
3. The remaining masonry units were laid in the first course level and straight-edged -	____	____
4. The corner masonry units were laid in reverse direction on top of the first course -	____	____
5. Leveled and plumb from corner to corner correctly -	____	____
6. Laid remaining units in course level and straight edge -	____	____
7. Continued to reverse corner units and repeated steps 4,5, and 6 until desired height was reached -	____	____
8. Tooled joints -	____	____

Criteria: Competence in the task will be recognized when the pier is square, level, plumb and straight-edged, also the work is joined and free of cracks and holes.

Tools and Equipment:

Resources:

Duty: Constructing Foundations	**Duty No.** A **Task No.** 19

Task: Construct wall containing pilasters using appropriate tools and equipment to provide additional support for the wall.

Achievement Indicators: The learner:	Yes	No
1. Determined where pilaster was located in the wall -	____	____
2. Determined dimension of pilaster -	____	____
3. Laid out and bonded pilaster in wall, and made sure pilaster was square and parallel with face of wall -	____	____
4. Placed anchors or metal ties in pilaster wall -	____	____
5. Built around and flushed anchors or ties with mortar -	____	____
6. Continued to build pilaster as the wall progressed -	____	____

NOTE: Pilaster must be built with full head joints.

Criteria: Competence in the task will be recognized when the pilaster is level, plumb, square with all walls and anchored solid to the wall.

Tools and Equipment:	**Resources:**

Duty: Constructing Foundations	**Duty No.** A
	Task No. 20

Task: Construct single wall foundation form using appropriate tools and equipment to provide a cavity for the concrete.

Achievement Indicators:

The learner:	Yes	No
1. Referred to blueprints and building specifications -		
2. Laid out tools and materials -		
3. Selected plates and cut them to length -		
4. Laid off plates for studs (usually 2' - 0" o.c.) -		
5. Selected stud material and cut them to length (usually 3 1/2" less than finished wall) -		
6. Nailed studs between plates -		
7. Plumbed and braced on the outside of the form correctly -		
8. Nailed 1" stock to the inside face of studs and allowed stock to extend 16" beyond end of wall section for outside corners -		
9. Omitted end studs on inside form walls and allowed longer form to butt against shorter form. This made form removal easier -		
10. Located form sections in place and plumbed -		
11. Fastened forms together and nailed cleats in corners -		
12. Inserted openings -		
13. Checked forms for accuracy -		

Criteria: Competence in the task will be recognized when the following standards apply: the foundation wall form is without gaps, foundation wall form is fastened together with appropriate fasteners, studs are positioned at 24" intervals, and tongue edge of all boards are in an up position. ,

Tools and Equipment:	**Resources:**

Duty: Constructing Foundations

Duty No. A

Task No. 21

Task: Construct stud and sheathing wall form using appropriate tools and equipment to provide a cavity for concrete.

Achievement Indicators: The learner:

	Yes	No
1. Checked plans and specifications for dimensions -	____	____
2. Calculated size of form needed -	____	____
3. Measured and cut plates and studs to frame -	____	____
4. Nailed frame -	____	____
5. Cut the sheathing 1/4" larger than the frame -	____	____
6. Squared frame -	____	____
7. Nailed sheathing to frame -	____	____

Criteria: Competence in the task will be recognized when the form is tight and square with nail heads flush.

Tools and Equipment:

Resources:

Duty: Constructing Foundations

Duty No. A

Task No. 22

Task: Erect plywood panel wall form using appropriate tools and equipment to provide a cavity for concrete.

Achievement Indicators: The learner:	Yes	No
1. Checked plans for dimensions -	____	____
2. Laid out and snapped chalk line on footer and made the wall line -	____	____
3. Nailed 2 by 4 plate to line on footer -	____	____
4. Nailed snapties every 24" on top of plate -	____	____
5. Nailed first panel flush with plate -	____	____
6. Leveled panel -	____	____
7. Installed temporary brace -	____	____
8. Aligned second panel with first panel -	____	____
9. Nailed second panel to plate and to first panel -	____	____
10. Continued first row of panels to length that was designated on plans -	____	____
11. Repeated step 3 and secured sanpties directly over ties below -	____	____
12. Placed second row of panels staggering vertical joints -	____	____
13. Continued steps 4-8 until desired height had been achieved -	____	____
14. Placed panels opposite first wall and followed steps 4-8 -	____	____
15. Nailed walers on snapties -	____	____
16. Nailed bulkheads where it was necessary -	____	____
17. Braced and aligned form -	____	____

Criteria: Competence in the task will be recognized when the wall is plumb and able to hold the amount of concrete to fill the form.

Tools and Equipment:	**Resources:**

Duty: Constructing Foundations	**Duty No.** A **Task No.** 23

Task: Erect manufactured wall form using appropriate tools and equipment to provide a cavity for concrete.

Achievement Indicators: The learner:	Yes	No
1. Determined size and location of the form from the plans -	____	____
2. Selected lengths and shapes of required manufactured wall form -	____	____
3. Set manufactured wall form into place -	____	____
4. Attached wall ties as per manufacturer's instructions. -	____	____
5. Checked manufactured wall form for plumb and level -	____	____
6. Checked elevations -	____	____
7. Adjusted if necessary -	____	____
8. Secured wall with wales and bracing as per manufacturer's instructions -	____	____

Criteria: Competence in the task will be recognized when the manufactured wall form is secure, level, plumb, and set at specified position and elevation.

Tools and Equipment:	**Resources:**

Duty: Constructing Foundations

Duty No. A

Task No. 24

Task: Form intersecting walls at corners using appropriate tools and equipment to allow a change in direction of the walls.

Achievement Indicators: The learner: Yes No

1. Erected all of the outer panels of the foundation and set them in place temporarily - ____ ____
2. Set the corner panel. Nailed the end of the sheathing to the last stud of the panel where the corners met - ____ ____
3. Inserted spreaders at appropriate intervals - ____ ____
4. Checked alignment by string and test blocks - ____ ____
5. Checked walls so that they were plumb and in agreement with building lines - ____ ____

Criteria: Competence in the task will be recognized when the corner forms are at 90^0, spreaders are used to insure uniform wall thickness as the forms were secured, and wall forms are plumb and in agreement with building lines.

Tools and Equipment:

Resources:

Duty: Constructing Foundations

Duty No. A

Task No. 25

Task: Make frame for pocket using appropriate tools and equipment to receive heavy beams in concrete walls.

Achievement Indicators: The learner:

	Yes	No
1. Determined from plan the length and size of the beam -		
2. Prepared beam pocket that received wood beam -		
3. Placed prepared beam in pocket -		

Criteria: Competence in the task will be recognized when a girder pocket is provided by framing in foundation wall.

Tools and Equipment:

Resources:

Duty: Constructing Foundations

Duty No. A

Task No. 26

Task: Attach wooden beams or steel beams to wood or steel columns using appropriate tools and equipment to hold up the beams.

Achievement Indicators: The learner:	Yes	No
Wood:		
1. Determined from the plan size, length, and spacing of the column -	____	____
2. Bolted or mortised when placed -	____	____
Steel:		
1. Determined from plan, size and length of the column -	____	____
2. Prepared beam pocket or "saddle" that received beam at proper elevation -	____	____
3. Bolted beam end to beam pocket or saddle rivet welded -	____	____

Criteria: Competence in the task will be recognized when the column is of the proper length, ends of the columns are cut at a 90° angle, and fasteners meet FHA building codes.

Tools and Equipment:

Resources:

Duty: Constructing Foundations

Duty No. A

Task No. 27

Task: Install door and window opening bucks using appropriate tools and equipment to provide openings in the concrete.

Achievement Indicators: The learner: Yes No

1. Determined placement of openings for windows and door from the plans - ____ ____
2. Laid out on floor to center line of door openings - ____ ____
3. Laid out on masonry wall center line of window openings - ____ ____
4. Assembled and set door buck and anchored to the floor - ____ ____
5. Marked window jambs on the existing masonry - ____ ____
6. Proceeded with the building of the wall to specifications - ____ ____

Criteria: Competence in the task will be recognized when window and door bucks are in proper position and the following standards apply: bucks conform to plan dimensions, bucks are aligned, bucks are securely braced, and bucks are level and plumb.

Tools and Equipment:

Resources:

Duty: Constructing Foundations

Duty No. A

Task No. 28

Task: Install expansion and contraction joint in concrete slab using appropriate tools and equipment to allow control of concrete movement.

Achievement Indicators:

The learner:	Yes	No
1. Measured the inside perimeter of forms -	____	____
2. Cut the expansion/contraction joints to desired lengths -	____	____
3. Set expansion/contraction joints around inside perimeter of forms, butting joints -	____	____
4. Poured the concrete slab up to the expansion/contraction joints -	____	____

Criteria: Competence in the task will be recognized when the concrete slab has expansion and contraction joints around perimeter.

Tools and Equipment:

Resources:

Duty: Constructing Foundations	**Duty No.** A **Task No.** 29

Task: Install anchor bolt in concrete using a bolt to provide a method of securing future construction to the concrete.

Achievement Indicators: The learner:	Yes	No
1. Pushed the anchor bolt into the wet concrete -	____	____
2. Adjusted the height of the bolt to desired exposure -	____	____
3. Checked bolt for plumb -	____	____
4. Tamped and smoothed the concrete around the bolt -	____	____

Criteria: Competence in the task will be recognized when the anchor bolt is secure in the concrete with specified exposure.

Tools and Equipment:	**Resources:**

Duty: Constructing Foundations

Duty No. A

Task No. 30

Task: Install anchor bolt in concrete block using a bolt to provide a method of securing future construction to the blocks.

Achievement Indicators: The learner:

	Yes	No
1. Stuffed the paper into the void of concrete block -	____	____
2. Filled remainder of the void with mortar -	____	____
3. Pushed the anchor bolt into wet mortar -	____	____
4. Adjusted the height of the bolt to desired exposure -	____	____
5. Checked bolt for plumb -	____	____
6. Tamped and smoothed mortar around the bolt -	____	____

Criteria: Competence in the task will be recognized when bolts are secure in the concrete block with specified exposure.

Tools and Equipment:

Resources:

Duty:	Constructing Foundations	**Duty No.**	A
		Task No.	31

Task: Install vapor barriers using appropriate tools and equipment to provide a damp proofing of the area.

Achievement Indicators: The learner:	Yes	No
Under Concrete		
1. Prepared the site by raking smooth and removed large and rough objects -	____	____
2. Spread polyethylene smoothly over the area leaving no wrinkles -	____	____
3. Scattered a thin layer of sand to keep polyethylene - from blowing -	____	____
4. Proceeded with pour -	____	____
On Wall, New Construction or Remodeling		
1. Prepared wall that received polyethylene -	____	____
2. Attached at one top corner -	____	____
3. Worked across the top and kept material smooth -	____	____
4. Fastened down center and worked both directions and kept material tight -	____	____

Criteria: Competence in the task will be recognized when vapor barrier material is installed over the exposed area and the following standards had applied: entire surface was covered with vapor barrier material, no punctures existed on the positioned material and no wrinkles.

Tools and Equipment:	**Resources:**

Duty: Constructing Foundations

Duty No. A

Task No. 32

Task: Waterproof concrete block wall using appropriate tools and equipment to prevent water penetration.

Achievement Indicators: The learner:

	Yes	No
1. Prepared the wall to be waterproofed -	____	____
2. Waterproofed the exterior side of block below grade -	____	____
3. Set drainage pipe along exterior side of the footing -	____	____
4. Covered pipe with a layer of gravel -	____	____

Criteria: Competence in the task will be recognized when the interior of block wall remains dry while ground water outside is carried away from wall.

Tools and Equipment:

Resources:

Duty: Constructing Foundations

Duty No. A

Task No. 33

Task: Clean and repair forms using appropriate tools and equipment to allow reuse and smooth surfaces during next pour.

Achievement Indicators:

The learner:	Yes	No
1. Replaced the damaged boards or sections of the damaged plywood -		
2. Replaced damaged studs, plates, braces (and squared the forms) -		
3. Reset nails and renailed loose boards or sections -		
4. Plugged all the holes larger than 1/4" in diameter -		
5. Checked form for dimensions and squareness -		
6. Applied treatment and preserved forms and prevented sticking of concrete -		

Criteria: Competence in the task will be recognized when all 6 concrete forms are cleaned and repaired, and the damaged parts are replaced and loose nails are reset.

Tools and Equipment:

Resources:

Duty: Constructing Foundations	**Duty No.** A **Task No.** 34

Task: Construct concrete step and stair forms using appropriate tools and equipment to provide a means of travel from one level to another.

Achievement Indicators: The learner:	Yes	No
1. Referred to plans for the details -	____	____
2. Determined the height and width of the sidewall -	____	____
3. Built panels for sides -	____	____
4. Located and plumbed the sidewalls -	____	____
5. Braced sidewalls -	____	____
6. Laid out the treads and risers on sidewalls -	____	____
7. Installed riser boards outside of layout lines and checked for plumb and level -	____	____
8. Braced center of risers and prevented spreading -	____	____
9. Installed position and held down braces -	____	____
10. Checked for accuracy for forms location and installation -	____	____

Criteria: Competence in the task will be recognized when concrete step stair forms are constructed and installed completely and are ready to receive mixed concrete.

Tools and Equipment:	**Resources:**

Duty: Constructing Foundations

Duty No. A

Task No. 35

Task: Construct stair forms using appropriate tools and equipment to provide a means of travel from one level to another.

Achievement Indicators: The learner:	Yes	No
1. Checked plans and specifications for stair detail -	____	____
2. Calculated rise and run of form correctly -	____	____
3. Calculated risers -	____	____
4. Selected stock -	____	____
5. Measured and cut stair stringers -	____	____
6. Cut stringer support correctly -	____	____
7. Secured stringer in position with supports -	____	____
8. Cut the sheathing for the base of stringer -	____	____
9. Cut the supports for form -	____	____
10. Secured form with supports -	____	____
11. Measured and cut the risers -	____	____
12. Beveled the bottom edge of risers -	____	____
13. Installed risers -	____	____
14. Cut the braces correctly -	____	____
15. Positioned braces -	____	____

Criteria: Competence in the task will be recognized when the stairs are straight and the total of the combined rise and run are no more than 18".

Tools and Equipment:

Resources:

Duty: Constructing Foundations

Duty No. A

Task No. 36

Task: Install bulkhead using appropriate tools and equipment to provide a pathway or dropped area.

Achievement Indicators:

The learner:	Yes	No
1. Checked plans for bulkhead detail -	____	____
2. Measured the height and width of intended bulkhead -	____	____
3. Selected and cut stock to the length -	____	____
4. Nailed framework together with studs 16" o.c. -	____	____
5. Measured and cut plyscore to bulkhead dimensions -	____	____
6. Nailed plyscore to framework -	____	____
7. Set bulkhead in place -	____	____
8. Checked bulkhead for level and elevation -	____	____
9. Adjusted if necessary -	____	____
10. Selected and cut braces -	____	____
11. Braced behind bulkhead -	____	____

Criteria: Competence in the task will be recognized when the bulkhead meets specifications and is braced to ground from behind.

Tools and Equipment:

Resources:

Duty: Constructing Foundations	**Duty No.** A **Task No.** 37

Task: Install expansion and contraction joint in concrete walls using appropriate tools and equipment to allow control and concrete movement.

Achievement Indicators: The learner:

	Yes	No
1. Determined the location of expansion/contraction joint from plans -	____	____
2. Set stop board along the location of expansion/contraction joint -	____	____
3. Braced stopboard from behind -	____	____
4. Poured concrete up to stopboard -	____	____
5. Allowed concrete to set -	____	____
6. Removed stopboard -	____	____
7. Set expansion/contraction joint in position against concrete -	____	____
8. Poured remaining area of concrete up to expansion/contraction joint -	____	____

Criteria: Competence in the task will be recognized when the expansion/contraction joint is straight and is placed at no more than 30' degree intervals.

Tools and Equipment:	**Resources:**

68

Duty: Constructing Foundations	**Duty No.** A **Task No.** 38

Task: Screed concrete in forms using appropriate tools and equipment to provide a level and true surface for sill plates.

Achievement Indicators: The learner:

	Yes	No
1. Selected straight stock -	____	____
2. Measured width of forms -	____	____
3. Cut stock to width of forms plus 2' -	____	____
4. Set length on edge across top of forms at one end -	____	____
5. Poured concrete into forms -	____	____
6. Dragged screed along forms with back and forth motion -	____	____
7. Filled holes which developed with excess concrete -	____	____
8. Repeated steps 4-7 until concrete work had been completed -	____	____

Criteria: Competence in the task will be recognized when the screeding is straight and level with no holes left in the finished concrete.

Tools and Equipment:

Resources:

Duty: Constructing Foundations

Duty No. A

Task No. 39

Task: Furr masonry walls using appropriate tools and equipment to provide a means of support for further wall coverings.

Achievement Indicators: The learner: Yes No

1. Decided the correct thickness of furring and obtained material - ____ ____
2. Furred corners first. Installed the first piece in the corner and cut length from ceiling to floor - ____ ____
3. Cut another piece and installed it against the adjoining wall and up to the first furring strip - ____ ____
4. Repeated this process for all inside corners - ____ ____
5. Furred exterior corners in a similiar manner - ____ ____
6. Installed furring strips on the wall surface up against the ceiling - ____ ____
7. Installed furring strips on the wall surface down against the floor - ____ ____
8. Laid off the wall so that the furring strip locations were seen. Plumb marks 16" on center -
9. Determined length of strips and cut - ____ ____
10. Installed strips on plumb marks - ____ ____

Criteria: Competence in the task will be recognized when the student has furr masonry walls with the following standards applying: furring strips are the required length, furring strips are fastened to masonry wall with appropriate fastener, furring strips are located 16" center, and furring strips are plumb.

Tools and Equipment:	**Resources:**

Duty: Working with Flat Concrete

Duty No. B

Task No. 1

Task: Compute materials using plans and specifications to estimate material needs for footing forms.

Achievement Indicators:

The learner:	Yes	No
1.- Determined total lineal footage of footings required -	____	____
2. Determined depth and width of footings -	____	____
3. Took the total lineal footage times two to determine the lineal footing ot form materials needed for sides of forms. Note: Form side materials should be 2" materials and either 8" or 12" wide boards according to the depth of footing -	____	____
4. Determined spacing of stakes and divided this into total lineal footage plus 2 for each corner to determine total number of stakes required -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and specifications.

Tools and Equipment:

Resources:

Duty: Working with Flat Concrete

Duty No. B

Task No. 2

Task: Compute materials using plans and specifications to estimate accurate amount of concrete required.

Achievement Indicators: The learner: Yes No

1. Determined footing depth, width and total length - ____ ____
2. Calculated concrete using the following formula:

$$\frac{\text{depth in feet x width in feet x total length in feet + waste factor(5\%)}}{\text{27cu. feet.}}$$

NOTE: 27 cu. ft. - 1 cu. yd. - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and specifications.

Tools and Equipment:

Resources:

Duty: Working with Flat Concrete

Duty No. B

Task No. 3

Task: Order materials using previous estimates to supply materials for job.

Achievement Indicators: The learner: Yes No

1. Blocked out forms and determined required lengths to construct each form wall - ____ ____
2. Determined the size materials required for stakes - ____ ____
3. Specified materials on purchase order according to quantity of pieces, quality (grade), surface finish, kind (species) and seasoning (kiln dried), and cost - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and estimates.

Tools and Equipment:

Resources:

Duty: Working with Flat Concrete

Duty No. B

Task No. 4

Task: Form concrete pads using appropriate tools and equipment to prepare project.

Achievement Indicators: The learner:

	Yes	No
1. Set grade stakes at perimeter -	____	____
2. Roughed grade area -	____	____
3. Set form stakes for corners to grade according to slab specs -	____	____
4. Stretched building line between corners -	____	____
5. Set form to line and stake -	____	____
6. Set grade using appropriate speed -	____	____
7. Speed set screed grade stakes or pipes, if span was greater -	____	____
8. Installed re-rod or mesh -	____	____
9. Installed expansion strips -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to industrial standards.

Tools and Equipment:

Resources:

Duty: Working with Flat Concrete

Duty No. B

Task No. 5

Task: Mix concrete using directions and handtools to prepare concrete for the job.

Achievement Indicators: The learner:

	Yes	No
1. Determined the proportions to be used -	____	____
2. Mixed cement, sand and aggregate dry -	____	____
3. Added water and mixed to proper consistency -	____	____
4. Placed concrete -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and estimates.

Tools and Equipment:

Resources:

Duty: Working with Flat Concrete

Duty No. B

Task No. 6

Task: Mix concrete using directions and power mixer to prepare concrete for the job.

Achievement Indicators:

The learner:	Yes	No
1. Determined size batches to be mixed -	____	____
2. Determined proper proportion for batch size and concrete use -	____	____
3. Mixed concrete, tested for proper consistency -	____	____
4. Placed concrete -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and estimates.

Tools and Equipment:

Resources:

Duty: Working with Flat Concrete	**Duty No.** B
	Task No. 7

Task: Set screeds using directions and appropriate screed material to provide necessary grade and level.

Achievement Indicators: The learner:

FLOORS	Yes	No
1. Determined depth concrete was to be poured -	____	____
2. Snapped a chalk line around perimeter of floor area to be poured -	____	____
3. Nailed expansion joints around the perimeter of basement wall -	____	____
4. Determined width of individual areas to be poured and placed screeds for screeding concrete as it was poured. NOTE: Set expansion joint inside screed form so that it would be adhered in place when screed form was removed for placing next section -	____	____
5. Checked level of screeds before starting to pour -	____	____
WALKWAYS		
1. Set forms in place and staked in position -	____	____
2. Checked level as top edge of forms would be used to screed walkway to proper level -	____	____
3. Scored walkways with groover or used an isolation strip as an expansion joint -	____	____
4. Placed concrete, screed to level -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to needs of job.

Tools and Equipment:	**Resources:**

Duty: Working with Flat Concrete

Duty No. B

Task No. 8

Task: Install expansion and contraction joints using trade accepted materials and methods to meet all possible size fluctuations.

Achievement Indicators: The learner:	Yes	No
1. Determined location of expansion or contraction joints from specifications -	____	____
2. Set ½" saturated felt strip along perimeter of area with top edge just below screed line -	____	____
3. Determined width of strip to be poured -	____	____
4. Set screed strip and leveled, placed isolation strip against screed strip -	____	____
5. As concrete was placed, was sure isolation strip remained in position -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practices.

Tools and Equipment:

Resources:

Duty: Working with Flat Concrete

Duty No. B

Task No. 9

Task: Pour concrete using established methods and tools to deliver concrete to proper formed area.

Achievement Indicators: The learner:

	Yes	No
1. Placed concrete into desired area -	____	____
2. Raked and spread concrete out to proper thickness and level (vibrated if needed) -	____	____
3. Screeded concrete to smooth and level -	____	____
4. Floated concrete as soon as it set proper time -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practices.

Tools and Equipment:

Resources:

Duty: Working with Flat Concrete	**Duty No.** B
	Task No. 10

Task: Pour concrete using appropriate tools and equipment to fill forms.

Achievement Indicators: The learner:

The learner:	Yes	No
1. Poured concrete in area allowing concrete to flow from form to form -	____	____
2. Vibrated or tamped concrete tightly to inside of forms -	____	____
3. Extended screed board from form to form across the concrete -	____	____
4. Screeded concrete -	____	____
5. Continued above procedure until project was poured -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to industrial standards.

Tools and Equipment:	**Resources:**

Duty: Working with Flat Concrete	**Duty No.** B **Task No.** 11

Task: Place concrete using established methods and tools to spread concrete throughout formed area.

Achievement Indicators: The learner:

	Yes	No
1. Placed concrete into desired area -	____	____
2. Raked and spread concrete out to proper thickness and level (vibrated if needed) -	____	____
3. Screeded concrete to smooth and level -	____	____
4. Floated concrete as soon as it sat a proper time -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practices.

Tools and Equipment:	**Resources:**

Duty: Working with Flat Concrete

Duty No. B

Task No. 12

Task: Finish concrete using appropriate tools and equipment to achieve desired surface quality.

Achievement Indicators: The learner:

	Yes	No
1. Bull-floated surface -	____	____
2. Tooled edges -	____	____
3. Marked seams with dry line -	____	____
4. Cut the seams with seamer -	____	____
5. Allowed concrete to set until firm enough to float trowel -	____	____
6. Used knelling boards -	____	____
7. Floated surface with wood or magnesium float until even -	____	____
8. Followed flat with steel trowel -	____	____
9. Followed steel trowel with additional steel troweling until desired finish was obtained -	____	____
10. Retooled seams and edges -	____	____
11. Brushed surface if required -	____	____
12. Could eliminate steps 5-10 by using power trowel and hard trowel edges -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to industrial standards.

Tools and Equipment:	**Resources:**

Duty: Working with Flat Concrete	**Duty No.** B **Task No.** 13

Task: Screed concrete using established methods and tools to level concrete throughout formed area.

Achievement Indicators: The learner:	Yes	No
1. Placed concrete into desired area -	____	____
2. Raked and spread concrete out to proper thickness and level (vibrated if needed) -	____	____
3. Screeded concrete to smooth and level -	____	____
4. Floated concrete as soon as it sat a proper time -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practices.

Tools and Equipment:	**Resources:**

Duty: Working with Flat Concrete

Duty No. B

Task No. 14

Task: Float concrete using established methods and tools to smooth concrete surface.

Achievement Indicators: The learner:	Yes	No
1. Placed concrete into desired area-	_____	_____
2. Raked and spread concrete out to proper thickness and level (vibrated if needed) -	_____	_____
3. Screeded concrete to smooth and level -	_____	_____
4. Floated concrete as soon as it sat a proper time -	_____	_____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practices.

Tools and Equipment:

Resources:

Duty: Working with Flat Concrete

Duty No. [illegible]

Task No. 15

Task: Vibrate concrete using established methods and tools to consolidate aggregate within concrete.

Achievement Indicators: The learner:

	Yes	No
1. Placed concrete into desired area -	____	____
2. Raked and spread concrete out to proper thickness and level (vibrated if needed) -	____	____
3. Screeded concrete to smooth and level -	____	____
4. Floated concrete as soon as it sat a proper time -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practices.

Tools and Equipment:

Resources:

Duty: Working with Flat Concrete	**Duty No.** B
	Task No. 16

Task: Finish concrete using hand float, edger, hand trowel and established method to refine surfaces and edges.

Achievement Indicators: The learner:	Yes	No
1. Floated concrete using bull float immediately after screeding -	____	____
2. Began floating as soon as water sheen had gone and concrete would sustain foot pressure with only a 1/4" indentation -	____	____
3. Edged to round edges and compacted to prevent chipping if an outside slab -	____	____
4. Cut away concrete next to form for about an inch depth and thickness of a margin trowel -	____	____
5. Set edges on edge and blocked forward with front edge slightly raised -	____	____
6. Jointed immediately after first floating operation or used 1/2" saturated felt isolation strip placed before pouring or grooved during finishing or used a saw kerf after finishing operations but within 48 hours, cut kerf with masonry saw blade -	____	____
7. Troweled following floating when a smooth and hard, dense surface was desired using a steel trowel to obtain a smooth finish -	____	____
8. Created broomed surfaces usually after the floating operation but if a finer texture was desired, brooming was done after troweling and with a soft bristled broom -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practices.

Tools and Equipment:

Resources:

Duty: Working with Flat Concrete

Duty No. B

Task No. 17

Task: Finish concrete using established methods and power trowel to refine floated surfaces.

Achievement Indicators: The learner:

	Yes	No
1. Did not trowel on a surface that had not been floated -		
2. Machine-troweled when surface would support machine and man with very slight indentation -		
3. Repeated trowelings to acquiare finer finishes -		

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practices.

Tools and Equipment:	**Resources:**

Duty: Working with Flat Concrete

Duty No. B

Task No. 18

Task: Apply shielding agent using appropriate curing methods and/or materials to protect curing concrete.

Achievement Indicators: The learner: Yes No

1. Protected concrete by covering with wet burlap, waterproof paper, plastic film or simply by sprinkling - ____ ____
2. Determined most appropriate way to protect concrete - ____ ____
3. Placed protective covering on concrete and secured - ____ ____
4. Allowed to stay required time then removed - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practices.

Tools and Equipment:

Resources:

Duty: Working with Flat Concrete	**Duty No.** B **Task No.** 19

Task: Install reinforcement using appropriate materials to strengthen concrete structure.

Achievement Indicators: The learner:	Yes	No
SLABS		
1. Determined appropriate strengthening materials -		
2. Added 6" #10 mesh to overall strength and used a lower water ratio -		
3. Placed mesh in approximate center of slab thickness -		
WALL OR FOOTINGS		
1. Determined the appropriate size re-rod according to footing thickness -		
2. Placed re-rod at least 3 inches away from any edge of concrete and uniformally across the width of footing or wall -		

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practices.

Tools and Equipment:	**Resources:**

Duty: Working with Flat Concrete	**Duty No.** B **Task No.** 20

Task: Rub formed surfaces using wood or stone smoothing block to finish concrete surfaces.

Achievement Indicators: The learner:	Yes	No
1. Mechanically spalded and chipped away the concrete surface with brush hammer -	____	____
2. Made sure that concrete had reached 3,750 psi before brush hammering was done -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practices.

Tools and Equipment:	**Resources:**

Duty: Helping Mason	**Duty No.** C **Task No.** 1

Task: Set up power mixer using instructed method to prepare mortar for masonry job.

Achievement Indicators: The learner:

	Yes	No
1. Positioned power mixer -	____	____
2. Blocked and leveled power mixer -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade standards.

Tools and Equipment:	**Resources:**

Duty: Helping Mason	**Duty No.** C **Task No.** 2

Task: Maintain power mixer using solvents and tools to assure that mixer is in working condition.

Achievement Indicators: The learner: Yes No

1. Listed maintenance procedure for power mixer - ____ ____
2. Demonstrated proper cleaning procedures - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade standards.

Tools and Equipment:	**Resources:**

Duty: Helping Mason	**Duty No.** C
	Task No. 3

Task: Carry materials using instructed method to place block and brick at designated areas.

Achievement Indicators: The learner:

The learner:	Yes	No
1. Determined bond pattern to be used on job -	____	____
2. Mixed mortar for job to proper consistency -	____	____
3. Established order of procedure in laying particular bond pattern -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to needs of job.

Tools and Equipment:	**Resources:**

Duty: Helping Mason	**Duty No.**	C
	Task No.	4

Task: Set up and dampen mortar board using instructed method to prepare board in order to hold mixed mortar.

Achievement Indicators: The learner:	Yes	No
1. Set up mortar boards -	____	____
2. Properly dampened mortar boards -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to needs of job.

Tools and Equipment:	**Resources:**

Duty: Helping Mason	**Duty No.** C
	Task No. 5

Task: Stock and temper mortar using instructed methods to provide mason with mortar of proper consistency.

Achievement Indicators: The learner:

	Yes	No
1. Demonstrated how to properly stock mortar -	____	____
2. Demonstrated how to properly temper mortar -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade standards.

Tools and Equipment:	**Resources:**

Duty: Helping Mason	**Duty No.** C **Task No.** 6

Task: Set up and level scaffolding using proper methods and materials to provide mason a safe work area.

Achievement Indicators: The learner:

	Yes	No
1. Assembled scaffolding -		
2. Leveled scaffolding -		
3. Placed, secured and leveled planking -		

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade standards.

Tools and Equipment:	**Resources:**

Duty: Helping Mason

Duty No. C

Task No. 7

Task: Stack scaffolding using proper methods and materials to provide mason work area of proper height.

Achievement Indicators: The learner:

	Yes	No
1. Listed the safety precautions necessary to stack scaffolding properly -	____	____
2. Demonstrated how to stack scaffolding properly -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to needs of job.

Tools and Equipment:

Resources:

Duty: Helping Mason

Duty No. C

Task No. 8

Task: Maintain work area using instructed methods to keep area safe and organized.

Achievement Indicators: The learner:

	Yes	No
1. Demonstrated proper storage of tools and materials -	____	____
2. Demonstrated safe cleaning techniques for a specific type work area -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to needs of job.

Tools and Equipment:

Resources:

Duty: Helping Mason

Duty No. C

Task No. 9

Task: Maintain materials using instructed methods to protect from affects of weather.

Achievement Indicators: The learner:

	Yes	No
1. Identified proper materials used for storage of bags of cement -	____	____
2. Demonstrated proper techniques for storage of bags of cement to protect from weather -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to needs of job.

Tools and Equipment:

Resources:

Duty: Helping Mason

Duty No. C

Task No. 10

Task: Compact fill area using power compactor to assure that fill area will not shift or settle.

Achievement Indicators: The learner: Yes No

1. Demonstrated safe operational procedure for power compactor - ____ ____
2. Demonstrated how to uniformly compact a filled area - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to needs of job.

Tools and Equipment:

Resources:

Duty: Constructing Brick Buildings

Duty No. D

Task No. 1

Task: Lay out brick wall using instructed methods to prepare the area for masonry work.

Achievement Indicators: The learner:	Yes	No
1. Established wall line and snapped chalk line on footing for first course -	____	____
2. Checked slab or footing to be sure that it was square NOTE: diagonal distance across corners should be the same -	____	____
3. Laid out first course dry to establish bond pattern and help eliminate excessive waste in cutting -	____	____
4. Spread mortar on one side of corner and furrowed it -	____	____
5. Laid corner brick exactly on the point where the corner was located, checked to see that it was level and square with wall line -	____	____
6. Laid four or five bricks in each direction for lead corner -	____	____
7. Plumbed and squared brick in corner lay up -	____	____
8. Laid up total corner and established wall height (NOTE: do this on all corners) -	____	____
9. Laid remainder of wall, stretched taut line for each course until wall was completed -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and specifications.

Tools and Equipment:

Resources:

Duty: Constructing Brick Buildings	**Duty No.** D
	Task No. 2

Task: Bond brick wall using correct measurements to prepare each course of masonry.

Achievement Indicators: The learner:

	Yes	No
1. Established wall line and snapped chalk line on footing for first course -	____	____
2. Checked slab or footing to be sure that it was square NOTE: diagonal distance across corners should be the same -	____	____
3. Laid out first course dry to establish bond pattern and help eliminate excessive waste in cutting -	____	____
4. Spread mortar on one side of corner and furrowed it -	____	____
5. Laid corner brick exactly on the point where the corner was located, checked to see that it was level and square with wall line -	____	____
6. Laid four or five bricks in each direction for lead corner -	____	____
7. Plumbed and squared brick in corner lay up -	____	____
8. Laid up total corner and established wall height -	____	____
9. Laid remainder of wall, stretched taut line for each course until wall was completed -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade standards.

Tools and Equipment:	**Resources:**

Duty: Constructing Brick Buildings

Duty No. D

Task No. 3

Task: Build leads and lay to the line using appropriate tools and methods to construct brick veneer wall.

Achievement Indicators: The learner:

	Yes	No
1. Laid out and snapped chalk lines indicating locations of metal ties for attaching brick veneer to frame construction -	____	____
2. Built up lead corners and opening leads -	____	____
3. Made sure ties were placed according to specifications, (one tie for every 2 square feet of area) -	____	____
4. Laid up remainder of veneer wall working to taut ties -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade standards.

Tools and Equipment:

Resources:

Duty: Constructing Brick Buildings

Duty No. D

Task No. 4

Task: Cut brick using masonry saw or brick set to achieve correct brick size for formation of wall.

Achievement Indicators: The learner:

	Yes	No
Brick Set		
1. Laid out length of brick needed -	____	____
2. Placed brick set in position and tapped with brick hammer -	____	____
3. Trimmed with chisel end of brick hammer to exact length -	____	____
Masonry Saw		
1. Measured and marked brick to be cut -	____	____
2. Secured and put on safety glasses before operating masonry saw -	____	____
3. Placed brick in position -	____	____
4. Proceeded to cut bricks -	____	____
5. Shut off machine and cleaned up area -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to measurements.

Tools and Equipment:

Resources:

Duty: Constructing Brick Buildings

Duty No. D

Task No. 5

Task: Measure brick wall using spacing rule or module rule to gauge correct linear dimensions.

Achievement Indicators: The learner: Yes No

1. Used brick spacing rule to check the height of a brick wall - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans.

Tools and Equipment:

Resources:

Duty: Constructing Brick Buildings	**Duty No.** D **Task No.** 6

Task: Measure brick wall using story pole to gauge proper height dimensions.

Achievement Indicators: The learner: Yes No

1. Used story pole already laid out to check height of brick wall - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans.

Tools and Equipment:

Resources:

Duty: Constructing Brick Buildings

Duty No. D

Task No. 7

Task: Form a corbel using proper tools and methods to strengthen or enhance masonry structure.

Achievement Indicators: The learner:	Yes	No
1. Determined the total distance that the corbel would extend from edge -	____	____
2. Tied each course firmly back full thickness of wall -	____	____
3. Was sure that each succeeding course didn't sag or ease forward -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade standards.

Tools and Equipment:

Resources:

Duty: Constructing Brick Buildings

Duty No. D

Task No. 8

Task: Clean brick wall using commercially available materials to complete finished wall.

Achievement Indicators: The learner:

	Yes	No
1. Determined technique to be used for cleaning brick wall -	____	____
2. Secured materials for cleaning -	____	____
3. Proceeded to clean brick wall -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade standards.

Tools and Equipment:

Resources:

Duty: Constructing Brick Buildings

Duty No. D

Task No. 9

Task: Calculate amount of materials using formula to estimate material needs for job.

Achievement Indicators: The learner: Yes No

1. Determined the wall area to be bricked - ____ ____

Note:

$$\text{Total bricks} = \underline{\text{wall height x length of wall}} \times \frac{\text{\# of bricks}}{\text{100 sq. ft.}}$$

* a 5% waste factor should be added

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and specifications.

Tools and Equipment:

Resources:

Duty: Constructing Concrete Block Buildings	**Duty No.** E **Task No.** 1

Task: Mix mortar materials using hand tools to prepare mortar for block job.

Achievement Indicators: The learner:

	Yes	No
1. Used proper techniques in proportioning materials -	____	____
2. Used proper sequence in adding materials -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to estimated needs.

Tools and Equipment:

Resources:

Duty: Constructing Concrete Block Buildings	**Duty No.** E **Task No.** 2

Task: Mix mortar materials using power mixer to prepare mortar for block job.

Achievement Indicators: The learner:	Yes	No
1. Used proper safety procedures in operation of power mixer (MIOSHA and OSHA standards) -	____	____
2. Used proper proportioning techniques -	____	____
3. Mixed batch of mortar to proper consistency -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to estimated needs.

Tools and Equipment:	**Resources:**

Duty: Constructing Concrete Block Buildings	**Duty No.** E **Task No.** 3

Task: Calculate quantity/blocks using formula to meet job requirements.

Achievement Indicators: The learner:

	Yes	No
1. Calculated the number of blocks for a specific wall of a building -	____	____
2. Illustrated the proper method of calculating concrete blocks -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade practices.

Tools and Equipment:	**Resources:**

Duty: Constructing Concrete Block Buildings	**Duty No.** E **Task No.** 4

Task: Estimate mortar using product recommendations to meet job requirements.

Achievement Indicators: The learner: Yes No

1. Illustrated the proper method for estimating mortar for concrete block walls - ____ ____
2. Estimated the correct quantity of mortar for a specific concrete block wall (100%) - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade practices.

Tools and Equipment:	**Resources:**

Duty: Constructing Concrete Block Buildings

Duty No. E

Task No. 5

Task: Transfer lines using established methods/dimensions to locate building on prepared footings.

Achievement Indicators: The learner:

	Yes	No
1. Used plumb bob to locate each corner of the building on top of footings -	____	____
2. Snapped a chalk line representing outside of block wall, if square -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and specifications.

Tools and Equipment:

Resources:

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Duty: Constructing Concrete Block Buildings

Duty No. E

Task No. 6

Task: "Bond out"course of blocks using visual estimation, brick rule and actual placement of blocks to determine proper horizontal placement of blocks.

Achievement Indicators: The learner:

	Yes	No
1. Determined pattern that bond would follow -	____	____
2. Layed out bond to insure that all vertical joints were staggered -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practicies.

Tools and Equipment:

Resources:

Duty: Constructing Concrete Block Buildings

Duty No. E

Task No. 7

Task: Lay out openings using proper measuring tools to determine locations of pilaster, chase, doors and windows in block walls.

Achievement Indicators: The learner: Yes NO

1. Determined location of pilaster, chase, doors and windows and snapped chalk lines for blocks to be laid to - ____ ____
2. Laid blocks and checked opening above for plumb and squared with each layer of blocks laid - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and specifications.

Tools and Equipment:

Resources:

Duty: Constructing Concrete Block Buildings	**Duty No.** E **Task No.** 8

Task: Position openings using proper measuring tools to determine locations of pilaster, chase, doors and windows in block walls.

Achievement Indicators: The learner:

	Yes	No
1. Determined location of pilaster, chase, doors and windows and snapped chalk lines for blocks to be laid to -	____	____
2. Laid blocks and checked opening above for plumb and squared with each layer of blocks laid -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and specifications.

Tools and Equipment:

Resources:

Duty: Constructing Concrete Block Buildings

Duty No. E

Task No. 9

Task: Gauge masonry wall using a story pole to determine proper vertical spacing of blocks.

Achievement Indicators: The learner:	Yes	No
1. Checked specifications and laid out on a 2 x 4 the height of each row of block, window heights and door heights and top of block wall -	____	____
2. Checked heights with story pole to keep block running exact height needed -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practices.

Tools and Equipment:

Resources:

Duty: Constructing Concrete Block Buildings

Duty No. E

Task No. 10

Task: Gauge masonry wall using modular rule to determine proper vertical spacing of masonry.

Achievement Indicators: The learner:

	Yes	No
1. Checked each row of block laid with modular rule to insure proper height(NOTE: modular refers to a ruler laid off in modular units of 4" each) -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practices.

Tools and Equipment:

Resources:

Duty: Constructing Concrete Block Buildings

Duty No. E

Task No. 11

Task: Gauge corner starting points using transit to determine level locations on story pole/building shell.

Achievement Indicators: The learner:

	Yes	No
1. Used carpenter's 4' level check:		
a. top for level -	____	____
b. side horizontally -	____	____
c. diagonally along side	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practices.

Tools and Equipment:

Resources:

Duty: Constructing Concrete Block Buildings

Duty No. E

Task No. 12

Task: Adjust measurement of concrete leads using line, proper math skills, and mortar to establish corner points that match each other.

Achievement Indicators: The learner: Yes No

1. Set masonry line in position where top of block would align up with line when block was in correct position - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practices.

Tools and Equipment:

Resources:

Duty: Constructing Concrete Block Buildings	**Duty No.** E **Task No.** 13

Task: Lay up concrete leads using line, proper math skills, and mortar to establish corner points that match each other.

Achievement Indicators: The learner: Yes No

1. Set masonry line in position where top of block would align up with line when block was in correct position - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current practices.

Tools and Equipment:	**Resources:**

Duty: Constructing Concrete Block Buildings	**Duty No.** E **Task No.** 14

Task: Lay up concrete blocks using masonry tools and line to complete course of blocks.

Achievement Indicators: The learner: Yes No

1. Set masonry line in position where top of block would align up with line when block was in correct position - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practices.

Tools and Equipment:	**Resources:**

Duty: Constructing Concrete Block Buildings

Duty No. E

Task No. 15

Task: Cut concrete blocks using brick set or masonry saw to provide opening in blocks.

Achievement Indicators: The learner:	Yes	No
MASONRY SAW		
1. Installed masonry blade on masonry saw -	____	____
2. Marked blocks and proceeded to score with masonry saw -	____	____
3. Tapped blocks with brick hammer to finish separating -	____	____
4. Smoothed broken edge with hammer and brick set -	____	____
BRICK SET		
1. Laid out and marked block -	____	____
2. Positioned brick set in place, tapped with brick or heavy hammer -	____	____
3. Cleaned up good face of block with brick set and brick hammer -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to current trade practices.

Tools and Equipment:

Resources:

Duty: Constructing Concrete Block Buildings	**Duty No.** E
	Task No. 16

Task: Apply reinforcement using commerical reinforcement materials to strengthen block structure vertically and horizonatally.

Achievement Indicators: The learner:	Yes	No
1. Tied together offset jamb blocks with a "Z" shaped non-corrosive bar laid across the joint -	____	____
2. Tied together intersecting walls with a 1/4" thick, 1 1/4" wide, and 28" long tie bar with 2" upright bends -	____	____
3. Tied non-bearing block walls together by use of 1/4" mesh galvanized hardware cloth placed across the pickles -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade practice.

Tools and Equipment:	**Resources:**

Duty: Constructing Concrete Block Buildings

Duty No. E

Task No. 17

Task: Joint and point block walls using proper masonry tools to refine appearance of mortar joints.

Achievement Indicators: The learner:

	Yes	No
1. Jointed all horizontal joints first using a jointer (at least 22" long) -	____	____
2. Struck the vertical joints with a small S-shaped jointer -	____	____
3. Removed any mortar burrs with trowel or burlap bag -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade practice.

Tools and Equipment:

Resources:

Duty: Constructing Concrete Block Building

Duty No. E

Task No. 18

Task: Apply wall ties using commercial materials to connect existing structure and masonry materials.

Achievement Indicators:

The learner:	Yes	No
1. Used the "Z" tie bar, "U" tie, rectangular tie, and prefabricated ties to hold 2 walls together -	____	____
2. Placed wall ties by imbedding in the bed of mortar -	____	____
3. Nailed wall ties imbedded in mortar to framed wall -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade practice.

Tools and Equipment:

Resources:

Duty: Constructing Concrete Block Buildings

Duty No. E

Task No. 19

Task: Install door buck using rough opening measurements and trade accepted materials to prepare door rough opening for door installation.

Achievement Indicators: The learner:

	Yes	No
1. Determined size door buck needed -	____	____
2. Secured materials, laid out, marked, and cut door buck materials -	____	____
3. Set door buck in position; secured with concrete nails -	____	____
4. Checked door buck for plumb and square -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and specifications.

Tools and Equipment:

Resources:

Duty: Constructing Concrete Block Buildings

Duty No. E

Task No. 20

Task: Install window bucks using rough opening measurements and trade accepted materials to prepare window rough opening for window installation.

Achievement Indicators: The learner:

	Yes	No
1. Set window in position with lintel and sill in position -	____	____
2. Positioned jamb blocks, placed level on vertical surfaces and tapped jamb blocks until frames were plumb -	____	____
3. Checked base and top of window on horizontal for level -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are peformed according to plans and specifications.

Tools and Equipment:

Resources:

Duty: Constructing Concrete Block Buildings

Duty No. E

Task No. 21

Task: Install reinforced lintels using commercially fabricated materials to support structure over windows or doorways.

Achievement Indicators: The learner: Yes No

1. Determined size and specific location of lintel - ____ ____
2. Laid out, marked and cut the materials for forms - ____ ____
3. Laid all blocks up to top edge of door opening - ____ ____
4. Set reinforcement rods at least 3" from outside edge of form - ____ ____
5. Poured concrete in the form, consolidated and floated the top surface - ____ ____
6. Allowed to set and cure before removing forms - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and specifications.

Tools and Equipment:

Resources:

Duty: Constructing Concrete Block Buildings

Duty No. E

Task No. 22

Task: Calculate amount of anchor bolts using code requirement formula to estimate material needs for job.

Achievement Indicators: The learner:

	Yes	No
1. Determined the total lineal footage of wall length to receive anchor bolts -	____	____
2. Determined from specifications the type anchor bolt specified -	____	____
3. Calculated the number of anchor bolts required (using following formula):	____	____
4. Ordered 22 anchor bolts of the size and type specified in specifications -	____	____

$$\text{Total anchor bolts} = \frac{\text{total wall length} + \text{corners}}{8}$$

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and specifications.

Tools and Equipment:

Resources:

Duty: Constructing Concrete Block Buildings	**Duty No.** E **Task No.** 23

Task: Specify size and number of anchor bolts using code requirement and estimate to meet job requirements.

Achievement Indicators:

The learner:	Yes	No
1. Determined the total lineal footage of wall length to receive anchor bolts -	____	____
2. Determined from specifications the type anchor bolt specified -	____	____
3. Calculated the number of anchor bolts required (using formula) -	____	____
4. Ordered 22 anchor bolts of the size and type specified in specifications -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and specifications.

Tools and Equipment:	**Resources:**

Duty: Constructing Concrete Block Buildings	**Duty No.** E **Task No.** 24

Task: Install anchor bolts using tape measure to mark locations to meet job requirements.

Achievement Indicators: The learner:

	Yes	No
1. Determined the spacing of anchor bolts -	____	____
2. Secured screen, anchor bolts and material for making mortar -	____	____
3. Set anchor bolts in position and filled cavity with mortar and plumbed -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and specifications.

Tools and Equipment:	**Resources:**

Duty: Constructing Concrete Block Buildings

Duty No. E

Task No. 25

Task: Apply parging using commercial materials to form moisture barrier.

Achievement Indicators:

The learner:	Yes	No
1. Mixed plaster materials to proper consistency -		
2. Dampened block wall -		
3. Troweled first ¼" coat of plaster on wall -		

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade practice.

Tools and Equipment:

Resources:

Duty: Constructing Concrete Block Buildings	**Duty No.** E **Task No.** 26

Task: Apply coating using bituminous type commercial material to form moisture barrier.

Achievement Indicators: The learner:

		Yes	No
1.	Brushed wall surface to remove all loose particles -	____	____
2.	Troweled on at least a ¼" coat of bituminous coating -	____	____
3.	Formed a cove at base of wall and coated to edge of footing -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade practice.

Tools and Equipment:

Resources:

Duty: Constructing Residential Chimneys and Fireplaces

Duty No. F

Task No. 1

Task: Calculate fireplace supplies using proper formulas to estimate materials needed for job.

Achievement Indicators: The learner:

	Yes	No
1. Determined the surface area of the fireplace and calculated the brick required -	____	____
2. Calculated the firebrick required for lining the chamber -	____	____
3. Determined total height of flue and calculated the flue lining required -	____	____
4. Determined area of front of fireplace and calculated stone required to veneer face -	____	____
5. Determined opening and estimated the length of angle iron required for lintel across the front -	____	____
6. Checked accuracy of calculations before ordering materials -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performee according to plans and specifications.

Tools and Equipment:

Resources:

Duty: Constructing Residential Chimneys and Fireplaces

Duty No. F

Task No. 2

Task: Lay out, form and pour fireplace pad using proper measurements and tools to construct basis for masonry chimney and fireplace.

Achievement Indicators: The learner:

		Yes	No
1.	Determined size of fireplace pad -	____	____
2.	Laid out area for pad, checked across diagonals for accuracy and squareness of lay out -	____	____
3.	Laid out, marked, and cut form materials -	____	____
4.	Set stakes and placed vertical side pieces in position -	____	____
5.	Placed #5 reinforcement grid in position after pouring first three inches of concrete (Note: #5 reinforcement rod is placed 9" apart, forming a grid with the intersections tied) -	____	____
6.	Continued pouring, vibrated, or consolidated to prevent honeycombing along edge -	____	____
7.	Screed off top level with forms, then floated to acquire a relatively smooth surface -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and specifications.

Tools and Equipment:

Resources:

Duty: Constructing Residential Chimneys and Fireplaces

Duty No. F

Task No. 3

Task: Install ash dumb using proper methods and tools to provide means to clean chimney.

Achievement Indicators: The learner:

	Yes	No
1. Located the position of ash dump -	____	____
2. Set door of ash dump in position -	____	____
3. Sealed in place with mortar -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade standards.

Tools and Equipment:

Resources:

Duty: Constructing Residential Chimneys and Fireplaces

Duty No. F

Task No. 4

Task: Install clean out door using proper methods and tools to provide means to clean chimney.

Achievement Indicators:

The learner:	Yes	No
1. Located the position of clean out door -	____	____
2. Set clean out door in position -	____	____
3. Sealed in position with special clay-mortar -	____	____
4. Checked clearance of door that it works freely -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade standards.

Tools and Equipment:

Resources:

Duty: Constructing Residential Chimneys and Fireplaces	**Duty No.** F **Task No.** 5

Task: Install a thimble using proper methods and tools to connect the device to chimney .

Achievement Indicators: The learner:

	Yes	No
1. Located the position of thimble -	____	____
2. Set thimble in position and sealed with special clay mortar -	____	____

Criteria: Competence in the task will be recognzied when the achievement indicators are performed according to trade standards.

Tools and Equipment:	**Resources:**

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Duty: Constructing Residential Chimneys and Fireplaces	**Duty No.** F **Task No.** 6

Task: Install flue liner using proper methods and tools to construct a safer chimney.

Achievement Indicators: The learner:

	Yes	No
1. Mixed mortar to proper consistency for joining flue liners -	____	____
2. Installed flue liners with good clean joint free of voids -	____	____
3. Aligned and plumbed each liner section as placed -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to code.

Tools and Equipment:	**Resources:**

Duty: Constructing Residential Chimneys and Fireplaces

Duty No. F

Task No. 7

Task: Cut flue liner using proper methods and tools to achieve correct size prior to liner application.

Achievement Indicators: The learner:

	Yes	No
1. Identified proper tools for cutting flue liners -	____	____
2. Cut flue liner to specified length -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade standards.

Tools and Equipment:	**Resources:**

Duty: Constructing Residential Chimneys and Fireplaces

Duty No. F

Task No. 8

Task: Rough in hearth and bottom of fireplace using proper methods and tools to construct the firebox.

Achievement Indicators: The learner:	Yes	No
1. Located and marked location of fireplace hearth -	____	____
2. Located and marked the bottom of fireplace -	____	____
3. Roughed in framing for fireplace bottom -	____	____
4. Made sure framing conformed to building code -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and specifications.

Tools and Equipment:

Resources:

Duty: Constructing Residential Chimneys and Fireplaces

Duty No. F

Task No. 9

Task: Set prefabricated firebox using proper methods and tools to install the unit.

Achievement Indicators: The learner:

	Yes	No
1. Located and marked position on hearth for prefabricated unit -	____	____
2. Set metal firebox for fireplace unit in place -	____	____
3. Plumbed and anchored unit to hearth -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to unit specifications.

Tools and Equipment:	**Resources:**

Duty: Constructing Residential Chimneys and Fireplaces	**Duty No.** F
	Task No. 10

Task: Set zero clearance prefabricated fireplace unit using proper methods and tools to install unit.

Achievement Indicators: The learner:

	Yes	No
1. Laid out and marked location of unit -	____	____
2. Set prefabricated unit in place and plumbed -	____	____
3. Framed in around zero clearance unit -	____	____
4. Observed building codes for placement of noncombustible materials -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to unit specifications.

Tools and Equipment:

Resources:

Duty: Constructing Residential Chimneys and Fireplaces

Duty No. F

Task No. 11

Task: Bond brick using brick and measurements to prepare fireplace.

Achievement Indicators:

The learner:	Yes	No
1. Established wall line of fireplace and strung line before laying brick -	____	____
2. Laid dry run of bricks to establish proper bond pattern -	____	____
3. Indicated proper placement of ties to bond fireplace wall in place -	____	____
4. Disassembled dry run and laid brick bonding together as per specification -	____	____
5. Checked for plumb -	____	____
6. Struck joints -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans and specifications.

Tools and Equipment:

Resources:

Duty: Constructing Residential Chimneys and Fireplaces	**Duty No.** F
	Task No. 12

Task: Measure for hot and cold air openings using measuring tools to lay out openings for grills.

Achievement Indicators: The learner:

The learner:	Yes	No
1. Identified cold and hot air grills on blueprints -	____	____
2. Established or laid out location of hot and cold air grills for each room -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to unit specifications.

Tools and Equipment:

Resources:

Duty: Constructing Residential Chimneys and Fireplaces

Duty No. F

Task No. 13

Task: Lay brick or stone using proper materials, tools and methods to form fireplace face.

Achievement Indicators: The learner:	Yes	No
1. Laid out and established bond pattern for fireplace -	____	____
2. Mixed mortar to proper consistency -	____	____
3. Maintained proper size head and bed joints -	____	____
4. Laid up corners and plumbed -	____	____
5. Laid up openings and plumbed -	____	____
6. Laid brick to line and uniform -	____	____
7. Laid bricks level and flushed with one another -	____	____
8. Struck or raked joints and cleaned with brush -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans.

Tools and Equipment:

Resources:

Duty: Constructing Residential Chimneys and Fireplaces

Duty No. F

Task No. 14

Task: Lay brick or stone using proper materials, tools and methods to form a hearth.

Achievement Indicators: The learner: Yes No

1. Located position of hearth - ____ ____
2. Established bond pattern for hearth bricks - ____ ____
3. Laid hearth, checking for:
    a. squareness - ____ ____
    b. uniformity of joints - ____ ____
    c. uniformity or levelness of hearth - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans.

Tools and Equipment:

Resources:

Duty: Constructing Residential Chimneys and Fireplaces

Duty No. F

Task No. 15

Task: Install mantel material using proper tools and methods to provide mantel.

Achievement Indicators:

The learner:	Yes	No
1. Established location of fireplace mantel -	____	____
2. Located and placed anchor bolts for mantel -	____	____
3. Placed mantel in position and secured -	____	____
4. Plumbed and leveled mantel -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to plans.

Tools and Equipment:

Resources:

Duty: Constructing Residential Chimneys and Fireplaces	**Duty No.** F **Task No.** 16

Task: Apply flashing using proper tools and methods to form weather proof chimney shield.

Achievement Indicators: The learner:

	Yes	No
1. Cut base flashing -	____	____
2. Cemented front base flashing in place -	____	____
3. Cemented side flashing in place -	____	____
4. Cemented all base flashing together as placed in position -	____	____
5. Set metal cap flashing in position as top of chimney was built (NOTE: flashing should be set into mortar joint at least ½") -	____	____
6. Capped flashing on front in one continuous piece -	____	____
7. Side cap flashing steps up chimney as the roof reaches farther up side of chimney -	____	____
8. Went around chimney and carefully bent down each piece of cap flashing over the base flashing -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade standards.

Tools and Equipment:	**Resources:**

Duty: Constructing Residential Chimneys and Fireplaces

Duty No. F

Task No. 17

Task: Install ducts and fans using proper tools and methods to provide circulation system.

Achievement Indicators: The learner:

	Yes	No
1. Laid out and positioned all ducts for circulation system -	____	____
2. Connected all joints and taped with duct tape -	____	____
3. Placed all registers in position in wall or floor -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade standards.

Tools and Equipment:

Resources:

Duty: Constructing Residential Chimneys and Fireplaces	**Duty No.** F **Task No.** 18

Task: Install protective device using proper materials, tools and methods to cap off chimney.

Achievement Indicators: The learner: Yes No

1. Laid final bricks or blocks so that at least 4" of flue lining projected above the chimney cap - ____ ____
2. Made the cap a layer of mortar sloped up from outside edge in to liner at approximately 30° angle - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade standards.

Tools and Equipment:	**Resources:**

Duty: Constructing Residential Chimneys and Fireplaces

Duty No. F

Task No. 19

Task: Apply wall ties using proper materials, tools and methods to anchor chimney.

Achievement Indicators: The learner:

	Yes	No
1. Placed the ties as chimney was built up and secured to building frame -	____	____
2. Installed fire stops between all wood framing member and outside edge of chimney -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade standards.

Tools and Equipment:

Resources:

Duty: Constructing Residential Chimneys and Fireplaces

Duty No. F

Task No. 20

Task: Calculate flashing materials using formula to estimate and specify material needs.

Achievement Indicators: The learner:	Yes	No
1. Cut base flashing materials from 90# mineral surfaced roofing -	____	____
2. Cut flashings so that it extended 10" up chimney, allowed 4" for bend and extended 8" down or up roof -	____	____
3. Cut flashing so it extended 10" past width of chimney on each side, top edge was cut to slope of roof -	____	____
4. Cut base flashing so that it was 22" wide x length, (was equal to width of chimney plus 20 inches) -	____	____
5. Cut cap flashing and extended down chimney to roof, (NOTE: metal to be 22" gauge aluminum or galvanized steel) -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to trade standards.

Tools and Equipment:

Resources:

Duty: Using Employability Skills

Duty No. G

Task No. 1

Task: Investigate employment information using sources of employment information to identify employment opportunities.

Achievement Indicators: The learner:

		Yes	No
1.	Developed a list of the prime sources of information concerning opportunities for employment -	____	____
2.	Described special procedures, if any, required to utilize services, information, etc. -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:

Resources:

Duty: Using Employability Skills	**Duty No.** G **Task No.** 2

Task: Identify job requirements using health, physical, legal, education, and other occupational information to determine the requirements of an occupation.

Achievement Indicators: The learner: Yes No

1. Listed the significant requirements (health, physical, legal, education, etc.) of the appropriate occupation - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills

Duty No. G

Task No. 3

Task: Acquire wage information using available resources to determine the approximate entry wages, general wage range, and significant fringe benefits for an occupation.

Achievement Indicators: The learner:	Yes	No
1. Listed the approximate entry wages, general wage range, and significant fringe benefits for the appropriate occupation -	____	____
2. Compared these wages and fringe benefits with other selected occupations -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:

Resources:

Duty: Using Employability Skills	**Duty No.** G
	Task No. 4

Task: Identify significant non-wage job characteristics using available resources to determine shift requirements, union affiliation, apprenticeships, occupational hazards, characteristics of work environment and other significant job factors.

Achievement Indicators: The learner: Yes No

1. Listed and described the significant non-wage characteristics (e.g., shift requirements, union affiliation, apprenticeships, occupational hazards, characteristics of work environment, etc.) - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** G **Task No.** 5

Task: Explore employment opportunities using available resources to describe local, regional, and national employment opportunities for an occupation.

Achievement Indicators: The learner: Yes No

1. Described the local, regional, and national employment opportunities for the appropriate occupation - _____ _____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** G ***Task No.*** 6

Task: Analyze career ladder using available resources to describe job progression in an occupation.

Achievement Indicators: The learner:

	Yes	No
1. Described the career ladder associated with the appropriate occupational area -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** G **Task No.** 7

Task: Identify personal criteria with information about available alternatives using a decision-making situation and procedures and skills in decision-making to choose a job, further training or other alternatives.

Achievement Indicators: The learner:	Yes	No
1. Compared personal criteria with information about a job, further training or other alternatives -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** G **Task No.** 8

Task: Prepare a resume using personal information to apply for a job.

Achievement Indicators: The learner:

	Yes	No
1. Prepared a resume -	_____	_____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** G **Task No.** 9

Task: Write a letter of application using personal notes to apply/inquire about a job.

Achievement Indicators: The learner: Yes No

1. Wrote a letter of application/inquiry - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** G
	Task No. 10

Task: Complete a job application using personal notes to apply for a job.

Achievement Indicators: The learner:	Yes	No
1. Completed a job application -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills

Duty No. G

Task No. 11

Task: Demonstrate appropriate dress using a knowledge of job requirements to comply with standards of on-the-job dress and grooming.

Achievement Indicators: The learner:

	Yes	No
1. Described and/or dressed in the attire of the appropriate occupational area, including:		
a. grooming -	____	____
b. required health and safety equipment -	____	____
c. uniforms -	____	____
d. other ______________________________ -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:

Resources:

Duty: Using Employability Skills

Duty No. G

Task No. 12

Task: Complete a job interview using communication and interpersonal skills to become employed.

Achievement Indicators:

The learner:	Yes	No
1. Described and/or demonstrated appropriate characteristics for job applicants including:		
a. attire -	____	____
b. grooming -	____	____
c. conduct during the interview -	____	____
2. Described and/or demonstrated the interview process -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:

Resources:

Duty: Using Employability Skills	**Duty No.** G **Task No.** 13

Task: Describe personal criteria using references to identify acceptable job offers.

Achievement Indicators: The learner:

	Yes	No
1. Listed personal criteria (financial, social, etc.) which described a job offer -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** G **Task No.** 14

Task: Demonstrate interpersonal skills to achieve successful relationships with others.

Achievement Indicators: The learner:	Yes	No
1. Identified probable causes for conflicts and at least one possible action to relieve the conflict -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** G **Task No.** 15

Task: Identify source of continuing education for an occupation using available resources to identify career ladder alternatives.

Achievement Indicators: The learner: Yes No

1. Described the types and sources of related continuing education for the appropriate occupation and/or advancement within the career ladder associated with the occupation - ____ ____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** G **Task No.** 16

Task: Describe job termination procedures using a knowledge of the occupational area to leave a particular job.

Achievement Indicators: The learner:

	Yes	No
1. Described procedures and practices for terminating a job -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

STUDENT ACHIEVEMENT RECORD

MASONRY

STUDENT ______________________________

INSTRUCTIONS:

Mark each student's level of competence according to the following guide:

LEVEL	GUIDE
1	Student has been exposed to task
2	Task accomplished with assistance
3	Task accomplished to criteria by student
4	Ability to teach or demonstrate the task to others

TASK	LEVEL	DATE
A. CONSTRUCTING FOUNDATIONS		
1. Estimate forming materials.		
2. Estimate concrete.		
3. Calculate concrete for footing and foundation walls.		
4. Estimate concrete block.		
5. Construct footing form.		
6. Install keyway for footing and foundation.		
7. Construct "T" type footing.		
8. Design footing for soil conditions.		
9. Install water seal at footing elevation.		
10. Supervise the installation of drainage systems for footings and foundations.		
11. Identify requirements and restrictions.		
12. Strip form.		
13. Align form walls.		
14. Install walers and form ties.		

TASK	LEVEL	DATE
A. CONSTRUCTING FOUNDATIONS (continued)		
15. Brace foundation wall forms.		
16. Construct double wall panel foundation forms.		
17. Construct box for special opening.		
18. Construct piers.		
19. Construct wall containing pilasters.		
20. Construct single wall foundation form.		
21. Construct stud and sheathing wall form.		
22. Erect plywood panel wall form.		
23. Erect manufactured wall form.		
24. Form intersecting walls at corners.		
25. Make frame for pocket.		
26. Attach wooden beams or steel beams to wood or steel columns.		
27. Install door and window opening bucks.		
28. Install expansion and contraction joint in concrete slab.		
29. Install anchor bolt in concrete.		
30. Install anchor bolt in concrete block.		
31. Install vapor barriers.		
32. Waterproof concrete block wall.		
33. Clean and repair forms.		
34. Construct concrete step and stair forms.		
35. Construct stair forms.		
36. Install bulkhead.		
37. Install expansion and contraction joint in concrete walls.		
38. Screed concrete in forms.		
39. Furr masonry walls.		
B. WORKING WITH FLAT CONCRETE		
1. Compute materials to estimate material needs for footing forms.		

TASK	LEVEL	DATE
B. WORKING WITH FLAT CONCRETE (continued)		
2. Compute materials to estimate accurate amount of concrete required.		
3. Order materials.		
4. Form concrete pads.		
5. Mix concrete using directions and handtools.		
6. Mix concrete using directions and power mixer.		
7. Set screeds.		
8. Install expansion and contraction joints.		
9. Pour concrete to deliver concrete to proper formed area.		
10. Pour concrete to fill forms.		
11. Place concrete.		
12. Finish concrete.		
13. Screed concrete.		
14. Float concrete.		
15. Vibrate concrete.		
16. Finish concrete using hand float, edger, hand trowel, and established method.		
17. Finish concrete using established methods and power trowel.		
18. Apply shielding agent.		
19. Install reinforcement.		
20. Rub formed surfaces.		
C. HELPING MASON		
1. Set up power mixer.		
2. Maintain power mixer.		
3. Carry materials.		
4. Set up and dampen mortar board.		
5. Stock and temper mortar.		
6. Set up and level scaffolding.		
7. Stack scaffolding.		
8. Maintain work area.		

TASK	LEVEL	DATE
C. HELPING MASON (continued)		
9. Maintain materials.		
10. Compact fill area.		
D. CONSTRUCTING BRICK BUILDINGS		
1. Lay out brick wall.		
2. Bond brick wall.		
3. Build leads and lay to the line.		
4. Cut brick.		
5. Measure brick wall to gauge correct linear dimensions.		
6. Measure brick wall to gauge proper height dimensions.		
7. Form a corbel.		
8. Clean brick wall.		
9. Calculate amount of materials.		
E. CONSTRUCTING CONCRETE BLOCK BUILDINGS		
1. Mix mortar materials using hand tools.		
2. Mix mortar materials using power mixer.		
3. Calculate quantity/blocks.		
4. Estimate mortar.		
5. Transfer lines.		
6. "Bond out" course of blocks.		
7. Lay out openings.		
8. Position openings.		
9. Gauge masonry wall using a story pole.		
10. Gauge masonry wall using modular rule.		
11. Gauge corner starting points.		
12. Adjust measurement of concrete leads.		
13. Lay up concrete leads.		
14. Lay up concrete blocks.		
15. Cut concrete blocks.		
16. Apply reinforcement.		
17. Joint and point block walls.		

TASK	LEVEL	DATE
E. CONSTRUCTING CONCRETE BLOCK BUILDINGS (continued)		
18. Apply wall ties.		
19. Install door buck.		
20. Install window bucks.		
21. Install reinforced lintels.		
22. Calculate amount of anchor bolts.		
23. Specify size and number of anchor bolts.		
24. Install anchor bolts.		
25. Apply parging.		
26. Apply coating.		
F. CONSTRUCTING RESIDENTIAL CHIMNEYS AND FIREPLACES		
1. Calculate fireplace supplies.		
2. Lay out, form and pour fireplace pad.		
3. Install ash dumb.		
4. Install clean out door.		
5. Install a thimble.		
6. Install flue liner.		
7. Cut flue liner.		
8. Rough in hearth and bottom of fireplace.		
9. Set prefabricated firebox.		
10. Set zero clearance prefabricated fireplace unit.		
11. Bond brick.		
12. Measure for hot and cold air openings.		
13. Lay brick or stone to form fireplace face.		
14. Lay brick or stone to form a hearth.		
15. Install mantel material.		
16. Apply flashing.		
17. Install ducts and fans.		
18. Install protective device.		
19. Apply wall ties.		
20. Calculate flashing materials.		

TASK	LEVEL	DATE
G. USING EMPLOYABILITY SKILLS		
1. Investigate employment information.		
2. Identify job requirements.		
3. Acquire wage information.		
4. Identify significant non-wage job characteristics.		
5. Explore employment opportunities.		
6. Analyze career ladder.		
7. Identify personal criteria with information about available alternatives.		
8. Prepare a resume.		
9. Write a letter of application.		
10. Complete a job application.		
11. Demonstrate appropriate dress.		
12. Complete a job interview.		
13. Describe personal criteria.		
14. Demonstrate interpersonal skills to achieve successful relationships with others.		
15. Identify source of continuing education for an occupation.		
16. Describe job termination procedures.		

CLASS ACHIEVEMENT RECORD

NAME TASK No.																							

GLOSSARY OF VOCATIONAL TERMS

Advisory Committee. An appointed group of concerned citizens and educators representative of the occupations for which training is given in the local school, organized for the purpose of helping to plan vocational programs and offering counsel on their development and operation.

Apprenticeship. An instructional program in which the learner works directly under a qualified craft worker to learn a trade.

Career Development. A lifelong process involving a series of experiences, decisions, and interactions, which, taken cumulatively, results in the formulation of a viable self concept and provides the means through which that self concept can be implemented both vocationally and avocationally.

Career Education. The total effort of public education and the community to help all individuals become familiar with the values of a work-oriented society, to integrate such values into their personal value systems, and to implement those values into their lives in such a way that work becomes possible, meaningful, and satisfying to each individual.

Career Interest. The student's decision to pursue a job description or cluster within a vocational education program area.

Cluster of Occupations. Occupations for which a common core of instruction can prepare, as for example automotive trades which prepares for such occupations as auto mechanic, auto body repairman, automotive services, auto inspector, and brake adjuster.

Completion. That statistic which describes individuals, including early leavers who have achieved their immediate objectives in preparation for entry or progressing in an occupational field and have left the vocational education program.

Cooperative Vocational Education. An instructional plan which combines learning experiences gained through regularly scheduled supervised employment in the community and vocationally oriented in-school instruction.

Coordinator (Cooperative Education). A member of a local school staff who teaches occupational and related subject content to students preparing for employment and coordinates the efforts of all helpful agencies which can assist in a training program designed to meet the needs of learners in a cooperative vocational education program. At times the coordinator may have varying degrees of responsibility in adult vocational education.

Course. A defined segment of a program.

Course Outline. An outline of subject matter to be presented or learning experiences planned for a course.

Course of Study. A guide prepared by administrators, supervisors, and teachers of a particular school or school system as an aid to teaching a given subject or area of study. More detailed than a course outline and includes statement of methods, materials, and equipment needed.

Curriculum. A sequence of educational and skill development experiences designed to accomplish a particular purpose. The curriculum for a program of vocational/technical education is designed to prepare an individual for entry, promotion, or upgrading in a specific occupation or cluster of occupations. (See definition of Cluster of Occupations.)

Disability. An injury or illness, temporary or permanent, which prevents workers from carrying on their usual occupations. A disability retirement is retirement because of physical inability to perform the job.

Disadvantaged. Disadvantaged persons are those who have academic, socioeconomic, cultural, or other handicaps that prevent them from succeeding in a regular vocational program designed for persons without such handicaps, and who for that reason require specially-designed educational programs and related services, or both, in order for them to benefit from a vocational program.

Discharge. Dismissal of a worker from employment. The term implies discipline for unsatisfactory performance and thus is usually limited to dismissals for such reasons as insubordination, absenteeism, or inefficiency.

Discrimination. Unequal treatment of workers in hiring, employment, pay or conditions of work because of race, national origin, creed, color, sex, age, union memebership activity, or any other characteristics not related to ability or job performance. Discrimination is prohibited by Federal, State, and local laws.

Duty. A large segment of work performed by an individual. It is one of the distinct major activities involved in the work performed, and it is composed of several related tasks.

Employer. General term for any individual, corporation, or other operating group which hires workers. The term "employer" and "management" are often used interchangeably.

Evaluation. A measuring or assessing of effectiveness. An on-going process by which effectiveness and progress are determined, used to guide change and offer directions for program modification and operation.

Exploratory Experiences. Those experiences in a variety of occupations, which help the students identify job traits in relation to their abilities and characteristics, and to assist them in making realistic and appropriate occupational choices.

Follow-Up Report. Usually a composite short-term or long-term report of former students indicating their present employment status or other present commitments (education, military, homemaking). More sophisticated follow-up studies seek to assess the effectiveness of the cooperative training experience to the student's present situation. Individual follow-up information is usually maintained in a student's record file.

Follow-Up Study. A study of the occupational status and progress of former students, as a means of evaluating effectiveness of the school's program of occupational preparation, of improving such preparation, and/or of determining needs of former students for further services.

General Advisory Committee. A committee that advises an institution as to its vocational/technical education activities overall. (See also; Occupational Advisory Committee).

Guidelines. The means by which significant characteristics in the evaluation of an institution or program are identified or measured.

Handicapped. Handicapped persons are those who are mentally-retarded, hard of hearing, deaf, speech-impaired, visually-handicapped, seriously emotionally disturbed, crippled, or other health-impaired persons who, by reason of their handicapping conditions, cannot succeed in a regular vocational or consumer and homemaking education program without special educational assistance, or who require a modified vocational program.

Hazardous Occupation. An occupation designated by State of Michigan and/or federal law to be considered dangerous to the health and well-being of minors.

Individualized Instruction. That type of instruction that provides techniques through which the teacher can work directly with individual students, as opposed to group instruction.

Inservice Teacher Education. All educational, and professional activities contributing to professional competencies which a person engages in after becoming employed, such as: formal course work, work experience, internships, practicums, seminars, and independent-individualized studies.

Internship. Student performs in approved job situation. Usually paid and given credit for the work. In-school instruction usually given before the work period and seldom tied in directly with job experiences. Typically one semester or more. Internship is a term used for collegiate experiences.

Job. The duties and tasks actually performed by a specific individual.

Job Analysis. See: Occupational Analysis.

Job Description. A written statement listing the elements of a particular job or occupation. The statement may include the purpose of the job, duties, equipment used, qualifications, training requirements, physical and mental demands, and working conditions.

Job Placement. Those organized activities performed by a guidance counselor or job placement coordinator designed to assist students in locating employment.

Job Type. A group of jobs that are composed of essentially the same significant duties and tasks.

Learning Resources. All textbooks, reference materials, equipment, supplies and other items and materials needed for successful achievement of learning objectives.

Manpower. People available to perform needed labor.

Management System. A technique employed to provide an organized method of accomplishing stated mission, goals, and objectives.

Minimum Wage. The lowest rate of pay, established by law or through collective bargaining, at which covered workers may be employed. The minimum wage is usually expressed as an hourly rate.

M.O.I.S. Michigan Occupational Information System.

National Occupational Competency Exam. A written and a performance exam developed by the National Occupational Competency Testing Institute, sponsored by T&I Education, for the purpose of determining the degree of competency that one has in a specific trade and industrial occupation.

Occupational Analysis. A technique for finding out what a worker in a specific occupation does and what he needs to know to perform his job efficiently, which is then used as a means of determining the teaching content in an occupational preparatory program.

Occupational Advisory Committee. A committee advising as to a program preparing for a particular occupation or cluster of occupations.

Occupational Competence. Includes technical knowledge and skills; manipulative skills; communication skills; human relations skills; work habits; and the ability to reason, to solve problems, to think independently, and to make judgments necessary for satisfactory employment in the occupation.

Occupational Field. A group of recognized occupations having many similarities, including the following characteristics in common; the type of work performed; the basic aptitudes, and the acquired knowledge and training required; the tools, machines, instruments, and other equipment used; and the basic materials used.

Occupational Objective. An occupational goal, selected by the student, the attainment of which is the purpose for his/her vocational instruction.

On-The-Job Training. Instruction in the performance of a sequentially planned task given a student-learner by the employer during the usual working hours of the occupation. Learning experiences at the training station comprises both the application of the theory of and the technical skill aspects of the learning situation, and/or the proper character, attitude and personality development of the student-learner as general goals of the training situation at the training station.

Occupational Information. Systematically organized data used by guidance personnel and others for the purpose of helping persons make a vocational choice. Material concerns the nature of the work, duties, responsibilities, and compensations involved in the several vocations, including information about employment outlook, promotional opportunities, and entrance requirements.

Occupational Objective. A specific recognized occupational goal, selected by the student, the attainment of which is the purpose of his vocational instruction. Also called: Career Objective.

Placement Coordinator. A person who provides local leadership to plan and initiate placement services.

Placement Services or Placement Activities. A series of coordinated activities for students planning further education or seeking part-time or full-time employment either for additional education, for on-the-job training or for earning a living.

Preparatory Instruction. Instruction preparing students for full or part-time employment. Also serves to prepare students to enter and advance in an occupation. Also serves to equip workers with new or different skills demanded by technological changes.

Preparatory Program. A preparatory program provides vocational instruction designed to prepare individuals for gainful employment as semi-skilled or skilled workers or technicians or semi-professionals in recognized occupations. Preparatory programs are provided in the school laboratory/classroom.

Professional Organizations. Groups of personnel interested in and working toward the improvement, advancement, and upgrading of activities, not only in their specific field, but also of activities in related fields of endeavor such as the American Vocational Association.

Program (Vocational Education). "Vocational program" means laboratory, simulation or instruction based upon individually designed learning experiences in a vocational subject preparing the student for competencies required in a recognized occupation coded in accordance with the most recent vocational education listing of programs by the United States Department of Education.

Related Vocational Instruction. In-school courses specifically designed to improve personal and social skills, provide needed basic education (remedial), and/or develop relevant occupational skills and knowledges. The course should be regularly scheduled, should complement the learning experiences at the training station, and should be planned and developed to meet the specific needs of the individual student. The content of this course should consist of the theory of the occupational skill, the specific related information, and the general related instruction necessary to achieve personal success in the world of work.

Resources. People, money and materials available to an institution in carrying out its purposes.

School Community. The total community from which the school draws students, support, and resources.

School District. An administrative unit at the local level which exists primarily to operate public schools or to contract for public school services. Normally, taxes can be levied by such units for school purposes. These units may or may not be coterminous with county, city or town boundaries. This term is used synonymously with the term "local basic administrative unit."

Skills. The acquisition of knowledge, ability, proficiency, dexterity and technical expertness that enables one to develop a learned power of doing a thing completely.

State Plan. The document submitted by the state board for vocational education to the U. S. Office of Education describing the state's vocational education program. Includes policies followed by the state in maintaining, extending, and implementing existing programs and establishing new programs to meet the intent of the Vocational Education Acts. Prerequisite for receiving federal funds under the Acts.

Survey, Community. A fact-finding study of socioeconomic conditions and resources, community agencies, industries, business, farming, institutional practices, problems and practices of families, etc., as they exist at a given time in a given community. It is generally used by the school as a guide in revising school offerings to meet local needs.

Survey, Occupational. A form of occupational census, taken by personnel trained to determine the number of qualified employees in a designated occupation in a specified geographic or economic area; and to evaluate the need for increasing or limiting the numbers available for employment in the occupations surveyed.

Task. A unit of worker activity that is intermediate in specificity between a function and a procedural work step or action. It is a discrete unit of work performed by an individual; that is, the unit usually has a definite beginning and ending, and it is performed within a limited period of time.

Task Analysis. A detailed listing of skills necessary to perform a clearly defined, specific job, organized into a logical sequence and which may be used for teaching employment, or classification purposes.

Task Inventory. An instrument used for conducting an occupational survey. It consists of items of identification and background information and a list of appropriate duty and task statements.

Teacher-Coordinator (Cooperative Vocational Education). A member of the local school staff who teaches technical and related subject matter to students preparing for employment and coordinates classroom instruction (related classroom) with learning activities at the training station. The coordinator is also responsible for the evaluation procedures of the program.

Trade and Industrial. Instruction planned to develop basic manipulative skills, safety practices, judgments, technical knowledge, and related occupational information for the purpose of preparing persons for initial employment in the trades and industrial occupations.

Training Agreement. A statement of fundamental agreements regarding the participation of a student in a work environment. Initiated by the school, the agreement reflects a voluntary and cooperative commitment on the part of the coordinator, employer, student, and parents/guardians.

Training Plan. A format for delineating, for each student, the learning experiences and tasks to be undertaken at the training station, often paralleled with classroom units of instruction. The training plan, cooperatively determined, usually becomes a part of the training agreement.

Training Station. The establishment providing learning experience for the student-learner.

VICA. Vocational Industrial Clubs of America. The youth organization for students at secondary and post-secondary levels who are in preparation for employment in trade & industrial occupations.

Vocational Education. Organized educational programs, services, and activities which are directly related to the preparation of individuals for paid or unpaid employment, or for additional preparation for a career requiring other than a baccalaureate or advanced degree.

Vocational Student Organizations. Organizations for student-learners that complement the vocational education program. Recognized student-learner organizations for vocational education are: DECA, Distributive Education Clubs of America; FFA, Future Farmers of America; FHA-HERO, Future Homemakers of America-Home Economics Related Occupations; HOSA, Health Occupations Students of America; OEA, Office Education Association at the postsecondary level in Michigan and BOEC, Business Office Education Clubs at the secondary level; VICA, Vocational Industrial Clubs of America. Organizations for students enrolled in vocational education programs, with national, state and local units, the activities of which are an integral part of the instructional program.

Work Experience and Career Exploration (WECEP). Program emphasizes learning experiences at the training station based on individual needs and provides learning experiences for those students whose needs cannot be served by regular cooperative education programs.

Work Experience Program. Students perform tasks of the actual job and may or may not be paid. Typically engaged in for general education values, including exploratory. Usually one semester or less. Limited school supervision; usually no related class.

Work Observation Program. Student observes work, does not perform tasks except to understand them. Unpaid. Plan is usually few weeks in length and may be tied in with a class in which occupational information is discussed.

Work-Study Program. A federal program designed to provide a vocational education student with employment in the public sector and supplemental income while attending school. The vocational program does not necessarily have to be related to the job.

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